Effects of Increasing Awareness of Pelvic Floor Muscle (PFM) Function on Pelvic Floor Dysfunction (PFD).

By

Kelli Berzuk

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ABSTRACT

Purpose

To evaluate the pelvic floor health knowledge base and presence of pelvic floor dysfunction (PFD) in women working in an office environment, and whether this knowledge significantly increases following a pelvic floor health education session and a re-education session.

To assess whether this knowledge-acquisition leads to significant decrease in PFD.

Participants

Female volunteers (N=161), ages 18-69 years, were randomly allocated to Groups A, B or C.

Methods

Online surveys were completed by all groups on three occasions and included validated tools (Prolapse and Incontinence Knowledge Quiz, Pelvic Floor Distress Inventory-20, Pelvic Floor Impact Questionnaire-7) plus sexual function and pelvic floor muscle (PFM) exercise items. On completion of the baseline survey, an education session was given to Groups A and B only (Group C represented the controls). Following this, all participants completed the second survey. Two months later, to allow time for efficacy for the PFM exercises, a re-education presentation was given to Group A only, followed by the final survey administered to all.

Analysis

Of the 161 volunteers, 16 failed to complete all study requirements, leaving 145 questionnaires (Groups A and B n=48, Group C n=49) available for analysis using ANOVA and Descriptive Analysis.

Results

The knowledge base of the participants receiving the education showed highly significant improvement compared to the control group, and again for those receiving the re-education session.

Although only 14% stated that they had PFD, the surveys revealed that 96% of the participants had PFD. The groups receiving the PFM exercise education and strategies to encourage healthier bladder and bowel habits showed significant decrease in PFD symptoms and increase in QoL.

Education was successful in producing highly significant increases in knowledge, importance and commitment toward PFM exercise.

Conclusion

This study is unique as it evaluated pelvic floor health knowledge and presence of PFD of presumably healthy women within an office setting in contrast to patients seeking PFD medical attention. While further research is required, it is clear that low pelvic floor health knowledge was associated with high prevalence of PFD. Further, as knowledge/awareness significantly increased following education, so did QoL, while PFD significantly decreased.

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I dedicate this PhD Thesis
to my loving husband Cal
and our beautiful angels, James and Cassidy.
Your constant love and support is my motivation, always.
Thank you.

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INTRODUCTION

Pelvic floor dysfunction (PFD) has become an ever-increasing socioeconomic and healthcare expense to society. Symptoms of PFD range from bothersome to debilitating and continue to be a challenge to both patients and healthcare professionals alike. While the prevalence of PFD is very high, affecting many millions of women worldwide in differing ways (social, occupational, physical, sexual, psychological, domestic, relationship, financial, etc.), most people have no, or limited, knowledge or awareness of pelvic floor health and therefore do not have, or seek the tools to prevent or correct these disorders (1,2) (see Table 1. Evidence for the Lack of Pelvic Floor Health Knowledge).

In the USA, the 2010 estimate for PFD surgeries related to incontinence plus pelvic organ prolapse (POP), totaled 355,096. If advances in education and prevention strategies do not occur, researchers project that by 2050, the annual number of these surgeries will be as high as 600,000 (3). This astounding statistic exemplifies the necessity for altering current practice and the essential need for the creation of PFD prevention strategies, hence, raising public knowledge is crucial (see Table 2. Rationale for Raising Pelvic Floor Health Awareness).

The Role of the Pelvic Floor Muscle (PFM) in PFD

To understand PFD, one must be aware of, and appreciate, the importance of the pelvic floor muscle (PFM) (for a complete listing of abbreviations used in this document,

see Appendix 1. Glossary of Acronyms and Terminology). The PFM holds the stalwart responsibility of ensuring proper bladder and bowel control as well as contributing to sexual function, supporting the pelvic organs so that they are able to properly function (4,5,6,7), aiding in respiration and, finally, the PFM offers core stabilization/postural support and assists in biomechanics for everything from simply maintaining a static posture, to lifting and ambulating (8). When the PFM is neglected or injured, one or multiple forms of PFD may result, such as bladder and bowel incontinence, obstructive micturition, constipation, pelvic pain and sexual dysfunction, POP and/or low back pain (4-9). The common element that anatomically and functionally connects the bladder and bowel in men, and the uterus in women, is the PFM, which physically links the pelvic organs and directly impacts the independent function of each. The PFM has been found to be dysfunctional in 77.2% of patients presenting for urinary, gastrointestinal and sexual symptoms (4).

Existing Awareness of Pelvic Floor Health: Is there a Need to Educate?

A study of 4558 women, presented by the International Continence Society (ICS) in Florence, Italy 2003, found that Canada, at 42%, had the highest incidence of stress urinary incontinence (SUI) in the nine countries studied (2). This telephone survey questioned the participants' attitude toward SUI and the impact of their symptoms, and also measured the women's awareness of PFD. The ICS study unveiled an overall lack of awareness regarding SUI, the most common form of female urinary incontinence, and recommended that a campaign directed at the female public, focusing on pelvic floor

health education and awareness, be warranted. Only 2% of those women suffering with SUI knew the name of their disorder. This study stated that the impact of SUI included negative effects on career, physical activity, intimacy and sex, self-confidence and self-esteem, social activity, freedom and vitality (2) (see Table 1. Evidence for the Lack of Pelvic Floor Health Knowledge).

The ICS study brought attention to the World Health Organization's statement calling urinary incontinence one of the "last medical taboos" (10) (see Table 2. Rationale for Raising Pelvic Floor Health Awareness). Of the women that reported symptoms of SUI, almost two-thirds had never sought medical attention for their symptoms, one-third believed there was nothing that could be done to help their symptoms, and nearly half were too uncomfortable to consider discussing their symptoms (2). Furthermore, these women rarely recognized the directly linked triggers associated with their incontinence episodes, and only 2% had realized that coughing and sneezing resulted in their loss of bladder control (2). This landmark study uncovered the profound lack of awareness toward pelvic floor health on a global scale.

While the ICS was gathering data for their global study, the need for educating the public regarding PFD was coming to light in the United Kingdom. Davis et al., had concluded that raising PFD awareness toward both the public and professional sector was imperative, with focus directed to the consequences of childbirth. Their findings of embarrassment, sexual inhibition and social isolation due to PFD led to their proposal to dismiss the "doctor knows best" philosophy and promote awareness and informed decision-making within the female population (11) (see Table 1. Evidence for the Lack of Pelvic Floor Health Knowledge).

Currently in the United Kingdom, Davis, again leading the research team, attempted to enhance health care related to PFD by highlighting the five priorities for improvement. The need for further development of PFD education and PFD awareness were the fourth and fifth recommendations. Increasing access to specialists, improving multi-disciplinary collaboration, and funding, were suggestions one, two and three, respectively (12) (see Table 1. Evidence for the Lack of Pelvic Floor Health Knowledge).

Recently, studies in both Greece (13) and South Africa (14) found similar indicators for the essential building of PFD awareness, while researching the epidemiology and prevalence of female urinary incontinence. Both groups of researchers noted that the high prevalence of female urinary incontinence was matched with a very low level of knowledge related to their disorder (see Table 1. Evidence for the Lack of Pelvic Floor Health Knowledge) (13,14).

The Epidemiology of Female Urinary Incontinence in the Greek Population (EURIG) study, interviewed 2000 Greek women ages 20 to 80 years. Liapis et al., found 27% of the women to be incontinent. This research group concluded that a significant effort is necessary to educate patients on their disorder, treatment options and the risks and benefits associated with each choice (13).

Similarly, the South African study took place in Ladysmith, KwaZulu-Natal where 99 women between the ages of 21 and 76 completed an administered questionnaire (14). Madombwe et al., found 35.4% of their participants to be incontinent. The South African research group was disturbed to discover that women were not being instructed in PFM exercises as a first-line defense of conservative management and plead for public

health programs to build awareness toward this treatable, and even preventable, medical condition (14).

In 2010, the International Urogynecology Association (IUGA) analyzed questionnaires completed by 458 patients to determine the level of knowledge patients possessed, related to their PFD condition. A Visual Analogue Scale of 1 to 10 was used to objectify their level of knowledge. The mean score of knowledge pertaining to their individual PFD was 5 out of a maximum 10 (15). Furthermore, the IUGA investigated whether or not patients were comfortable with the information they possessed or if they felt the need to seek out more facts regarding their disorder. Only 88 patients (19.5%) felt satisfied that they understood their medical condition and did not require further information. Of the remaining 370 patients, 44.5% had requested more information from their family physician, 23% made online inquiries and 13% used other sources to help them better understand their medical condition. From this data, the IUGA recognized that patients' knowledge regarding their PFD greatly varied, but overall was poor. They also commented that inconsistent, erroneous and contradictory information available to the public, negatively impacts their understanding further. Their recommendation was to produce a standardized leaflet to be used as an information handout (15) (see Table 1. Evidence for the Lack of Pelvic Floor Health Knowledge, and Table 2. Rationale for Raising Pelvic Floor Health Awareness). From these results, the IUGA felt the need to underscore the fact that patients can only be effective participants in their medical decision-making if they are fully informed about their disorder. Enabling the public to become their own medical advocate is an essential component to quality health care (16).

Rationale for Raising Pelvic Floor Health Awareness

Because of the preventable nature of many forms of PFD, such as urinary incontinence, Sampselle et al., suggests that it would be appropriate to consider PFD a public health problem and focus on prevention programs through increasing public awareness (17) (see Table 2. Rationale for Raising Pelvic Floor Health Awareness).

The research by Herbruck in 2008, supports this theory as the high costs associated with urinary incontinence and related PFD indicates a need for early management and even prevention. Herbruck stated that increasing education and awareness amongst society and health care providers was indicated to decrease the personal and governmental financial burden related to PFD (18) (see Table 2. Rationale for Raising Pelvic Floor Health Awareness).

Because women rarely seek medical attention for PFD (2,19,20), they frequently resort to coping strategies that not only encourage avoidance of seeking medical help to treat and resolve the PFD, but also often exacerbate symptoms, as they become long term, daily behaviors. Some of these self-coping strategies can also negatively impact overall health. Some examples of these poor coping strategies are voiding frequently, often hourly, to avoid leakage, reliance on incontinence pad products which may lead to infection and poor hygiene, and restricting fluid intake (21) (see Table 2. Rationale for Raising Pelvic Floor Health Awareness).

While obstetrical factors such as the effects of pregnancy on connective tissue and support structures, vaginal delivery, episiotomy, forceps, vacuum, etc., have been shown to be high risk factors for PFD (22), a U.S. study of 232 postpartum women found that significantly less pelvic floor health education was offered when compared to the

education received on all other pregnancy topics. Furthermore, 46.1% of these women received no education regarding PFM exercises (23) (see Table 2. Rationale for Raising Pelvic Floor Health Awareness), despite the resounding evidence in support of PFM strengthening pre- and post-pregnancy (24-29).

Impact of Education on Pelvic Floor Health Awareness

Canada has been in the forefront for assessing the impact of raising pelvic floor health awareness. In 2009, a group in British Columbia evaluated patient learning following a PFD educational program. Non-validated, PFD-specific knowledge and symptom questionnaires were completed by 51 women, before and after a 2 1/2 hour education workshop, presented by an incontinence nurse (30) (see Table 3. Existing Studies for Raising Awareness re: Pelvic Floor Health).

Knowledge scores showed a significant rise immediately post-workshop and remained significantly improved; however, a slight drop in retained knowledge was noted three months after the workshop, indicating the potential need for follow-up re-education. The raw scores for the incontinence and POP knowledge questionnaires combined were 28/39 pre-workshop, 36/39 immediately post-workshop ($p<0.01$) and 33/39 three months after the workshop ($p<0.01$). Participants' symptoms and quality of life (QoL) scores were also tracked with significant improvements to both categories noted at the three-month post-educational workshop evaluation. The tools used to measure the effect of the intervention were the Pelvic Floor Impact Questionnaire (PFIQ) (31) which showed a mean difference of 14.2 (range=4.7-23.8) in raw score ($p=0.005$, 95% CI) when

measuring the QoL domain; and, the Pelvic Floor Distress Inventory (PFDI) (31) with a mean difference of 17.4 (range=8.3-26.5) in raw score ($p<0.001$, 95% CI) when measuring the present symptoms of colorectal-anal, urinary and POP distress. These tools were wisely selected as they were created to measure the PFD symptoms being evaluated in this study, both the PFIQ and PFDI have been shown to be valid and reliable (31) and, furthermore, these objective measuring devices have stood the test of time.

This study supports the theory that raising PFD awareness and general knowledge on the topic results in a decrease in PFD symptoms and an increase in QoL for individuals affected. An educational intervention, in the form of a presentation workshop, positively impacted the lives of women suffering with bladder incontinence, bowel incontinence, or POP or, as often occurs, a co-occurrence of these PFDs (32,33).

While research evaluating the impact of PFD knowledge-acquisition is sparse on a global basis, in 2010 Canada was recognized for producing a second study on this topic. Researchers from Quebec and Alberta joined forces to determine the effect of an interactive, continence promotion workshop directed to older (age range=55-87 years) community-dwelling females. A total of 90 women experiencing bladder incontinence, who had never sought medical attention for their PFD, were recruited as participants and were asked to complete a non-validated, nine-item administered questionnaire, pre- and post-intervention, regarding knowledge, attitude skills toward incontinence, and intent to seek help for their symptoms (34) (see Table 3. Existing Studies for Raising Awareness re: Pelvic Floor Health). Follow-up telephone calls were completed at three and six-months post-intervention to assess participants' views toward seeking medical attention for their symptoms. It should be noted that the researchers developed their own, non-

validated questionnaire for data collection, since they felt no previously validated objective tool existed for their purposes. While this nine-item questionnaire met the specific needs of this study, the lack in available objective measuring tools highlights the need for creation and validation of questionnaires related to pelvic floor health awareness and knowledge.

This study found an increase of 94% in knowledge and attitude toward urinary incontinence, post-education workshop. Additionally, 43% of the participants had instilled proper and healthy self-care strategies and felt satisfied with their effect, while 42% had sought the advice of a qualified health care professional for consultation on their PFD. An overall total of 85% of participants reported a positive change in bladder-related behaviors. The significant increase in knowledge base and attitude did not reflect on whether or not participants chose to seek medical attention, or the frequency of their incontinence episodes, but rather the degree of bother of their symptoms seemed to direct this choice. Those who were most bothered by the incontinence consulted a medical provider. Of those who did not seek medical attention, 75% (77 of the 90 participants) stated that there was no need as the self-coping strategies and education supplied at the workshop were so effective that further help was no longer indicated (see Table 3. Existing Studies for Raising Awareness re: Pelvic Floor Health) (34).

While this study was limited by several factors, including the absence of a control group for comparison, and the use of a non-validated assessment tool for data collection, it succeeded in bringing attention to the fact that raising awareness and knowledge leads to better decision-making when choosing effective and healthy self-coping strategies, as well as encouraging much-needed consultation with medical providers. Tannenbaum et

al., encouraged further research in this field with focus on the best medium or forum for providing this necessary education (34).

Effect of Re-education

While increasing awareness and knowledge toward a PFD is imperative, the work of Dr. Geoffrion et. al., detected a drop in retained knowledge at three-months post-education intervention, indicating the need for a re-education component (30). She also reminds us that education is only one step (35). Education alone will not ensure success, as adherence is equally necessary. Her work sheds light on the importance of frequent reinforcement and enhancing self-efficacy as components of education and awareness, since these are critical factors that lead to an increase in compliance. With greater compliance comes greater likelihood of successful results following the intervention of building awareness and education. Neither component can be independent of the other if significant and lasting results are desired. Dr. Geoffrion encourages the reinforcement of education and the opportunity of participants to ask questions to bolster their confidence and motivation in implementing self-care strategy techniques, and to corroborate that the information is important, beneficial and is interpreted correctly (35). The forum to have questions and uncertainties addressed is an important factor in adherence promotion.

Moreover, the role of optimism is linked to increasing health-promoting behaviors and decreasing perceived stress in new moms (36), and a re-education forum allows additional occasion for this. A positive, interactive environment allowing for questions and reinforcement of education may be beneficial in allaying concern, correcting

misconception and decreasing stress which may be potential barriers to adherence, while offering an optimistic, motivating attitude toward health-promoting behaviors.

Do Women Want to Increase their Awareness?

A 2010 study looked at the information-seeking and decision-making preferences in 110 women who were suffering with PFD. The results showed that, while women with PFD were diverse in their decision-making toward treatment options, their desire to be well informed about their PFD and pelvic floor health in general was significantly strong. When asked to decide between the use of conservative PFD medical treatment options versus surgical intervention, 44% of the female participants preferred an active role in making this decision, 47% chose to collaborate with their physician when making this decision, and 9% selected to be passive in this decision-making role. The women in this study displayed a strong preference to be made fully aware of all medical treatment options available to them. Furthermore, the higher the participants' education level, the greater their desire for this information (37). This supports the IUGA findings that only 19.5% of their PFD patients were satisfied with their current level of PFD-related knowledge (15).

Barriers to Seeking Treatment for PFD

Many fallacies related to PFD exist in society. The perpetuation of these erroneous beliefs has been a barrier in seeking PFD treatment. Goldstein et al., showed

the commonly held ideas that urinary incontinence is a normal and acceptable consequence of childbirth and aging, prevented women from seeking medical attention. They stated that this lack of knowledge and the perpetuating of fallacies obstruct women from receiving treatment (38) (see Table 2. Rationale for Raising Pelvic Floor Health Awareness).

While Goldstein et al., (38) showed that lack of knowledge was a barrier to seeking medical care for urinary incontinence, Brittain et al., (39) determined the corollary that health promotion campaigns to raise awareness lead to an increase in asking for help. Their study found that the predominant precipitator for receiving medical treatment for urinary incontinence was raising awareness. Furthermore, this study highlighted the positive impact that raising pelvic floor health awareness can have on the loved ones of those suffering with urinary incontinence and other forms of PFD (39) (see Table 2. Rationale for Raising Pelvic Floor Health Awareness).

It has been speculated that racial differences may be a barrier to advancing knowledge pertaining to PFD. Shah et al., compared the knowledge base of white versus non-white women for both urinary incontinence and POP (40). Their results showed that, while race was a factor when comparing the urinary incontinence knowledge of white women to non-white women, race was not a factor when they compared these women for POP knowledge. The acceptable knowledge threshold was decided at 80% and 37.9% of the white participants versus 19.1% of the non-white females achieved this level, showing significant difference between knowledge of incontinence ($p=0.019$). However, the researchers found that, while the levels of knowledge for incontinence were, overall, notably low (37.9% of the white females and 19.1 % of the non-white females passed the

80% or greater level of incontinence knowledge), the overall scores of knowledge for POP were even lower with 37.9% of the white females and 23.5% of the non-white females only scoring 50% or higher in the POP knowledge questionnaire. On comparison, no significant racial differences were detected between the two groups ($p=0.354$) for the POP questionnaires; however, both scores were very low (40).

This study noted that higher education was associated with higher knowledge on the urinary incontinence scores, but was not associated with the POP knowledge levels. Income levels did not have an association on knowledge levels of either incontinence or POP. Overall, this study found a significant association between race and incontinence knowledge, some association to higher levels of education leading to higher incontinence knowledge, but no racial or education association to POP knowledge (40). While the impact of any form of PFD can be devastating, research shows us that a delay and even avoidance of seeking medical treatment is common practice. The ICS study presented earlier found that 62% of women with SUI have never consulted a physician and, of those that do, 20% wait up to three years and 10% wait for four years or more before talking to their doctor about their symptoms. This study also showed that 33% of women experiencing SUI believe nothing can be done about their disorder (2).

It has been shown that, in addition to patients who are reluctant to discuss symptoms of bladder incontinence, medical practitioners share this resistance. This supports the statement by the World Health Organization referring to urinary incontinence as one of the "last medical taboos" (10).

Mediums for Building PFD Awareness

Franzen et al., evaluated the effect of mailing urinary incontinence education pamphlets to the general public and followed up one to two months later with the mailing of a questionnaire (41). Of the 3658 addressees who were sent brochures and surveys, 47.5% responded. Of these, 66% stated that they gained new knowledge from this educational tool and 80% felt urinary incontinence was a significant societal health concern. Of those who replied, 28% reported a personal history with this particular PFD. Of those experiencing issues with incontinence, 49% of the participants found the information useful, while 10% found that the brochure was not at all helpful, 21% had employed the self-care treatment strategies (beginning PFM exercises was the most predominant lifestyle alteration), 30% felt the education on use of incontinence pads was beneficial and 10% sought medical attention for their problem (41) (see Table 3. Existing Studies for Raising Awareness re: Pelvic Floor Health).

In comparison, the interactive educational workshop evaluated in the Canadian study by Tannenbaum et al., noted a 43% implementation of self-coping behavioral strategies combined with a 42% rate of seeking the advice of a medical health care provider (34). From these two studies, it would appear that the interactive educational workshop doubled the use of healthy, behavioral coping strategies (43% of the interactive workshop participants versus 21% of the brochure recipients) and quadrupled the seeking of medical advice (42% of the interactive workshop participants versus 10% of the brochure recipients). Further investigations would be necessary for a conclusive comparison; however, the studies indicate higher successful responses to an interactive

educational workshop versus a mailed pamphlet of information for a medium of pelvic floor health education transfer and acquisition.

McFall et al., also showed significant results with interactive workshops for educating incontinent women on their medical condition and self-coping strategies. Following a program of five education sessions, more than one-third of the women reported resolution of their urinary incontinence symptoms. An additional 61% reported a greater than 50% reduction in their leakage episodes. A one-year follow-up revealed continued improvement in symptoms of 75% of the participants (42).

McFall et al., completed earlier research to determine a target population for this interactive workshop study and concluded that, since the health status, the personal beliefs regarding incontinence, and the socio-demographics of continent and incontinent women were so similar, combined with the fact that the prevalence of urinary incontinence was high, there was insufficient justification for any segmentation into a target population (43). Rather than offering education to a pre-determined group of women, these researchers deemed this necessary public health education should be accessible to all women. They stated that both continent and incontinent women would benefit from increasing awareness and knowledge so that those already suffering with symptoms would be able to correct them, and those with complete bladder control would be able to prevent issues, or at least be aware of treatment options and healthy self-care strategies when symptoms arose. Participants in this study were also questioned as to preferences of communicating incontinence education and the primary communication channel selected was to receive information directly from qualified health professionals (43).

Andragogical Considerations in Education

The pioneering work of Malcolm Knowles brought light to the importance of acknowledging and understanding the differences between the learning skills of children versus adults (44). Only by appreciating these distinctions are we able to educate effectively. Andragogy is the learning theory specific to adults and incorporates six basic characteristics. According to Knowles, adult learning is:

1. Autonomous and self-directed
2. Based on life experiences and previously acquired knowledge
3. Goal-oriented
4. Relevancy-oriented
5. Practical
6. Enhanced when the learner is shown respect.

This paradigm has been shown to effectually enhance the learning experience for the adult student (44-46). Furthermore, four factors should underlie all adult teaching strategies to increase the likelihood of successful knowledge transfer. These are:

1. Motivation
2. Reinforcement
3. Retention
4. Transference (45,46)

Motivation

While many motivations exist for adult learners such as, requirements for licensing or competence certification, expectation of elevation in job or career status, or a need to learn a new skill or adapt to a change in job requirement, the two most important aspects to adult motivation for learning are ‘selfish benefit’ and ‘personal interest’ (45,46).

Reinforcement

Reinforcement should consist of both positive and negative forms (45). Positive reinforcement is effective when acquiring a new behavior or skill, such as complimenting one's technique and diligence when incorporating an exercise program into their daily routine. Equally important is negative reinforcement when the goal is to remove or alter a bad behavior. An example of this is complimenting and crediting the effort taken to decrease one's daily consumption of caffeinated beverages such as coffee or, eliminate ingestion of artificially sweetened foods or beverages as these are irritating to the bladder and bowel.

Retention

It is critical to show adult learners why the information is personally meaningful in order for them to apply the information to their own lives. Information must be transmitted in a comprehensive fashion in order to be retained. This retention is enhanced when adult learners make a connection between this new knowledge and themselves (45).

Transference

Finally, transference comes with training. This new knowledge must be used to allow it to be embedded into one's lifestyle and behaviors. Transference, like reinforcement, is effective in both positive and negative adaptations (45). An example related to PFD self-care strategies would be when correcting toileting habits and biomechanics by educating women to sit and relax when voiding in a public washroom and to avoid 'hovering'. The new act of physically sitting on the toilet seat will positively

transfer the proper behavior, while no longer 'hovering' would be an example of negative transference as the harmful behavior is being prevented.

Integrating Andragogical Theory with Pelvic Floor Health Education

The field of andragogy is fascinating and extensive. While many more considerations exist, such as obstacles of work, social and personal responsibilities, scheduling conflicts, time restraints and limitations, access to finances, access to transportation, plus possible personal barriers such as lack of confidence or the presence of anxiety, visual, auditory, physical movement or memory changes with aging, and the differences between male and female learning (45), for the purposes of this document, it is sufficient to identify that knowing the learning population and adapting teaching styles to optimize the infiltration of the material is paramount.

To relate Knowles' six critical factors and the four teaching strategies to a pelvic floor health campaign directed at building PFD awareness, educators must integrate the philosophy to their teaching style. With regard to adults being autonomous and self-directed, the 'teacher' tends to transform into a facilitator rather than a didactic preacher of knowledge. Having said this, recall the work of McFall et al., where it was recognized that women preferred to be educated by a qualified health care professional (43). While andragogical principles may indicate equality between facilitator and participants, for the field of PFD education, a distinction of experience and expertise may be helpful so that the participants are confident in the accuracy of the information being transferred. For optimum gain it may be beneficial to offer both a facilitator figure as well as a qualified health care professional within the workshop setting.

It is valuable for the workshop facilitator to determine the interests of the learner and involve participants, as much as possible, in the education process, encouraging active participation and interaction as opposed to structure and formality. It is important to dedicate a segment of the workshop to the voices of the participants via a question and answer period having each participant sharing his or her topic-related experience or even role play activities, depending on the length of time during the workshop.

When the facilitator recognizes and acknowledges the expertise of the participants, a feeling of respect is created within the group setting and encourages participants to share their experiences and knowledge so that all may learn from each other. This also helps to form relationship bonds within the group and reinforces the feeling that participants are not alone with their PFD. As well, this introduces connectivity between the PFD-issue being discussed and how it affects one's own life situation, thereby increasing the likelihood of retaining the material. Since adult learners are goal-oriented, it is important for the facilitator to be organized and present understandable objectives with clearly defined goals. Making sure to illustrate achievement of goals throughout the session as positive reinforcement, or negative reinforcement if an unhealthy behavior has been avoided, encourages the learning process. Remembering that adults respond well to relevancy and practicality, it should be pointed out how certain areas of discussion fit specifically into their lives and how these alterations in diet or lifestyle will be used in day-to-day living. It is advantageous that pelvic floor health knowledge leads to 'selfish benefit' and is 'personally interesting' making the topic inherently motivating.

Overall, education can be transmitted through fun and motivating activities such as interactive game play or quiz formats, as well as role-play and case studies which can fit well within a PFD awareness education workshop and align with the recommendations for enhancing adult learning.

If facilitating a PFM exercise workshop, it is important to be cognizant and respectful of individual physical abilities and possible personal health restrictions. This active and practical learning is integral to adult comprehension and encourages transference and retention so that the exercises will be better implemented independently. As exercise instruction is begun, it is important to ensure that the group clearly appreciates why exercising their PFM is relevant to their PFD condition, or, why it is relevant for those wanting to prevent PFD. As the group actively completes the exercises, positive reinforcement of proper exercise techniques and negative reinforcement of any potentially harmful biomechanics should be stressed. During the exercise workshop, motivation to be diligent with the exercise program is important. For this, the goals of the exercise program, as well as the practical goals to expect when muscle strength is achieved, must be clearly discussed. Participants should be encouraged to look for and to recognize the achievement of these goals, and this should serve as motivation for the participants to continue their home exercise program.

Internet Use for Andragogy

A final contemplation for adult learning is the consideration of computer and Internet integration to disseminate information. Specifically with regard to transfer of health information, the literature is sparse; however, evaluation of the use of the Internet as an education medium is positive and exciting. The accessibility, both geographically

and socio-economically, granted by this forum is most likely the biggest asset (47,48). Another credit is the speed in altering information when needed. Commendably, adult online learning is learning in and of itself. While adults enrich their minds with new materials, to access this information they must become computer-savvy and develop powerful problem-solving skills, which will be beneficial in all aspects of information seeking via the world of telecommunications. In this forum, instructors often become more of a guide and possibly a co-learner, as the students continuously enlighten the teacher (47,48), which again supports Knowles' theory (44).

While the rewards to the use of the Internet are substantial, there are drawbacks to this medium. The emotional separation and connection to the instructor is certainly a disadvantage, since human interaction is an important factor in the teacher-student relationship. As well, it has been shown that teaching through online methods comes with a higher cost in time for the instructor, as compared to teaching face to face with online teaching requiring two to three times more time. This is attributed to the time taken to respond to blogs, online forum postings and e-mail, whereas this was presumably previously dealt with within the confines of allocated classroom time (47).

Raising Public Pelvic Floor Health Knowledge

Clearly, raising awareness through public education is necessary (1-4,9-20,23,34-43) and overdue. Women want this information and prefer to be well informed about their PFD condition and available treatment options (37), and only in this way will they be effective contributors in their medical decision-making (16). Since all women are at risk

of developing one or several forms of PFD, it is imperative to enlighten the entire female public on risk factors (see Table 4. Pelvic Floor Dysfunction (PFD) Risk Factors!), warning signs and symptoms (see Table 5. Pelvic Floor Dysfunction (PFD) Warning Signs!), self-care techniques such as PFM exercises, healthy bladder and bowel dietary choices, and proper toileting biomechanics, postures and strategies, and medical treatment options and resources available for prevention, correction and resolution of PFD. This education should be available to all women rather than targeting segments of the female population, and should be supplied by a qualified health care professional (43). As PFD is often preventable, correctable and highly prevalent, the importance of a pro-active approach is indicated, rather than waiting for symptoms to inevitably appear or existing issues to worsen.

For a public health campaign designed to raise awareness for PFD, it is important to reach the greatest number of women, and to do this all forums and available information-transfer mediums should be utilized. This would include a paper medium such as brochures and education pamphlets (41), online venues such as websites, blogs, twitter, widgets, eBooks, social and educational networking sites, YouTube and online forums, as well as billboards, television and radio. While the literature is still in the developmental stages with regard to assessing the most effective vehicle for PFD information transfer, the evidence-based outcomes to date indicate that the primary medium of choice should be interactive, group education workshop (30,34,35,42) formats, led by a qualified health care professional (43), and offered in a motivational, optimistic (36) and respectful environment (44-46). Furthermore, a re-education component is a practical augmentation to reinforce previous learning and skill development, as well as

giving opportunity to address questions, correct misconceptions, review goals, and motivate participants (35,44-46). While the most efficient number of workshops is yet undetermined, McFall et al., found that five were effective (42). For this female public health awareness research study, a primary education workshop with a subsequent education session approximately two months following was completed.

The existing literature clearly illustrates that the knowledge and awareness level regarding pelvic floor health is greatly lacking. In fact, much of what women believe to be true is, in fact, erroneous. Educating the female population is critical and the first step to bringing attention to this important area of health, with the next step being re-education to reinforce this information for retention and transference.

Fallacies such as incontinence being a normal part of aging or an acceptable consequence of pregnancy and childbirth cannot be allowed to continue to shape our societal or medical model. What women don't know could, and does, hurt them. Furthermore, when what is known is incorrect, it may inhibit women from seeking medical investigation and advice regarding available treatment options. This prevents society from moving forward and correcting or preventing the often unnecessary and potentially debilitating experience of PFD, known to be linked to financial burden, physical restrictions of decreased activity levels, social and relationship isolation, sexual anxiety, loss of self-confidence and self-esteem, negative effect on work and career, and increased risk to medical conditions such as depression, anxiety and infection (2,11,49,50).

Building awareness through education, for both society and medical health professionals, is crucial to changing erroneous public beliefs, encouraging healthy and

proper self-care strategies and improving accessibility to seeking medical advice and treatment options. Following this, reinforcement of this knowledge through a re-education process based on correct medical information, via an education-transfer medium filled with motivation, hope, optimism, and encouragement, is indicated. This ensures that adherence follows knowledge-acquisition for promotion of necessary lifestyle adaptation and modification for PFD correction and prevention.

Finally, this education and re-education must be superimposed on the philosophy that women are responsible for their health and must embrace the concept that they are their best health advocate (11,16,37). Enhancing knowledge, beliefs and attitudes toward pelvic floor health, actively supporting their personal pelvic floor health through effective PFM exercise, bladder and bowel-friendly diet, and proper biomechanical toileting habits and postures, being cognizant of risk factors and warning signs of PFD, and refusing to delay seeking medical advice for treatment options 'if', as opposed to the current situation of 'when' symptoms arise, produces a strong model for pelvic floor health.

LITERATURE REVIEW

To understand PFD, one must be aware of, and appreciate, the importance of the PFM. The need for keeping muscles healthy for the prevention of injury is a philosophy that is easily understood and universally accepted. So too, is the importance of proper rehabilitation in the recovery process when injuries unfortunately occur. However, there is a muscle in the human body that seems to elude this generally accepted philosophy, both for prevention of injury as well as the necessity for rehabilitation, even with the most extreme of injury. This muscle, like all muscles, has responsibilities to uphold, and neglect and injury can lead to devastating effects on the function of that muscle and the body as a whole.

The Pelvic Floor Muscle (PFM)

Consider the PFM as several layers creating a sling that attaches at the coccyx posteriorly and into the pubic bones anteriorly, forming the base of the pelvis (see Figure 1. Female Pelvis). When speaking of the PFM, it refers to the deeper layer known as the pelvic diaphragm, the more superficial layer, the urogenital diaphragm (4,5,6).

The pelvic diaphragm, also referred to as the levator ani muscle (and includes the coccygeus muscles), consists of three muscles; the pubococcygeus muscle that assists the urinary sphincter, the ileococcygeus muscle that is responsible for supporting the vagina, and the puborectalis muscle that assists the anal sphincter. The pelvic diaphragm is made up of striated muscle and attaches to the arcuate tendon as well as the anterior, posterior

and lateral aspects of the lower pelvis and sacrum. The levator ani is covered on both its superior and inferior surfaces with fascia allowing fascial connections to the pelvic wall (4,5,6).

The urogenital diaphragm is often called the perineum and is responsible for supporting the pelvic organs and assisting in sexual function. This diaphragm consists of the transverse perineal, bulbospongiosus and ischiocavernosus muscles. The perineal membrane is the deeper layer of the urogenital diaphragm while the bulbospongiosus and ischiocavernosus muscles make up the more superficial layer. The urogenital diaphragm, like the pelvic diaphragm, consists of striated muscle that attaches to the symphysis pubis, pubic rami, the perineal body and the ischial tuberosities as well as the pelvic wall via fascial connections (4,5,6) (see Figure 2. Anatomy of the PFM). The urogenital diaphragm interdigitates via fascia and connective tissue with the pelvic diaphragm and this, as a unit, constitutes the pelvic floor musculature. The diaphragms are further connected via the external urinary sphincter embedded in the urogenital diaphragm and crossing to the pelvic diaphragm.

A system of connective tissue referred to as endopelvic fascia attaches the bladder, urethra, uterus and vagina to the pelvic walls. The pelvic organs are encapsulated by visceral fascia that is continuous with the endopelvic fascia. In this way the organs are encased in a capsule-like cavity allowing for volume changes within the organs and displacement of the organs themselves (5,6).

Several imaging modalities allow evaluation of the PFM, such as computed tomography, magnetic resonance imaging and barium defecography. The use of ultrasound imaging allows real-time, dynamic evaluation of the pelvic floor and is available in three and four-dimensional evaluations (7). Ultrasound imaging has enhanced

the diagnosis ability in identifying tears and defects that may have arisen secondary to acute trauma, such as vaginal delivery with perineal tearing, or chronic daily strain such as obesity/increased body mass index, smoking, repetitive heavy lifting and straining from chronic constipation or hovering over toilet seats with urination.

Functions of the PFM

The PFM wraps around the urethral and rectal openings in women and men and, additionally, the vagina in women. The responsibilities of a stalwart PFM are extensive and include prevention of urinary and fecal leakage, increasing sexual satisfaction and supporting the internal organs (4,5,6,7). More recent literature revealed its role in assistance of respiration as well as postural and core stabilization of the trunk (8).

A weakened or injured PFM may no longer effectively close off the urethral and rectal openings and urinary and fecal incontinence may result (4,5,6,9) (see Figure 3a. Ineffective PFM Closure on Bladder Leads to Incontinence, and Figure 3b. Effective PFM Closure on Bladder Promotes Continence). Laxity or weakness in the PFM may lead to a decrease in sexual sensation and appreciation (49). Weakness or injury to the PFM can also allow the pelvic organs (such as the bladder, uterus, rectum and intestines) to fall downward instead of supporting them in their proper positions thereby decreasing their functional effectiveness (3,6,7). This downward displacement of the pelvic organs is known as pelvic organ prolapse (POP).

The analogy of a boat floating in water and tethered to a dock is often helpful to understand the role of the PFM in prevention and halting the progression of POP. When

the water level is high, the ropes will be slack with no tension placed on them; however, as the water level drops, the ropes become taut and must bear the weight of the boat. If the water level continues to remain low, the tension on the ropes will build and stretch the ropes. The ropes may begin to fray and may even snap. Now, replace the boat with the prolapsing pelvic organ, perhaps the bladder, and the ropes would be the connective tissue or endopelvic fascia, with the water level representing the PFM. When this muscle is strong and healthy, it will support the bladder and reduce the tension on the connective tissue. An unhealthy and weakened PFM will not support the bladder effectively and strain on the ligaments and fascia will lead to a downward plunge of the organ and over time, result in significant POP (51) (see Figure 4a. High Water Level: Ropes Lax/Tension-Free, Figure 4b. Low Water Level: Ropes Taut/Under Tension, and Figure 4c. Low Water Level Remains: Over Time Ropes Stretch/Fray).

A person with respiratory challenges, such as those diagnosed with asthma, can benefit from a healthy PFM as this muscle assists the diaphragm in improving breathing function (8). Finally, the PFM has been shown to offer postural and core stabilization, and neglect to this muscle may leave individuals at risk, or increase symptoms of low back pain and musculoskeletal injuries of the trunk (8).

When the PFM is unhealthy, the result may be seen in bladder dysfunction, bowel dysfunction, POP, pelvic pain, sexual dysfunction, respiratory dysfunction, musculoskeletal trunk injuries, or a combination of any or all dysfunctions (see Table 6. Pelvic Floor Muscle (PFM) Involvement in PFD).

Prevalence of PFD: Bladder Dysfunction

According to the Mayo Clinic website, June 2002, one out of every two female Americans will suffer from urinary incontinence at some point in their lives (52) (see Table 7. Prevalence of PFD: Bladder Dysfunction). North of the border, similar concerns of bladder dysfunction are prevalent among Canadian women. An international study of 4500 women, presented by the International Continence Society (ICS) in Florence, Italy 2003, found that Canada, at 42%, had the highest incidence of SUI in the nine countries studied (2) (see Table 7. Prevalence of PFD: Bladder Dysfunction).

Because definitions and populations vary between studies, the prevalence of urinary incontinence can show a dramatic range. Irwin et al., found that 13.1% of women over the age of 18 from Sweden, Germany, Italy, Canada and the United Kingdom reported incontinence (53) (see Table 7. Prevalence of PFD: Bladder Dysfunction), while three American studies noted a much higher prevalence of bladder leakage. Dooley et al., Melville et al., and Waetjen et al., noted incontinence levels of 49.6% (54), 45% (55) and 46.7 (56), respectively (see Table 7. Prevalence of PFD: Bladder Dysfunction).

A Canadian study in 2004 looked at the PFM of women suffering with SUI and compared them to women not experiencing SUI symptoms. The researchers used dynamometric measurements to objectify characteristics of the PFM such as passive force to determine resting tone level, hold-time of contraction to determine absolute endurance, number of rapid contractions in a 15-second interval, and maximum strength of PFM contraction. This study showed impairment in the PFM of the incontinent women in both, a decrease in resting tone, as well as a decrease in ability to sustain PFM contraction. This study further noted that the absolute maximum strength between the

two groups was not significantly different. This finding explained why medical professionals occasionally see women experiencing SUI who are able to generate decent muscle contraction for a minimal amount of time, erroneously leaving women feeling that their PFM is strong and healthy. Sufficient maximum strength, while an important PFM characteristic, is only one of the many factors of muscle assessment necessary for overall good health and function (9) (see Table 6. Pelvic Floor Muscle (PFM) Involvement in PFD). For example, if the PFM cannot sustain this contraction and quickly fatigues, incontinence may result, as the urethral closing pressure is not maintained. Additionally, if PFM resting tone is abnormally high, the PFM may not fully relax on the urethral sphincter during voiding, leading to incomplete bladder emptying or pain with voiding. Hypertonicity in the PFM can also lead to difficulty with bowel function and painful intercourse (57). Low PFM resting tone leads to SUI by ineffective closure of the urethra. If the PFM does not exhibit a healthy resting tone, the tone may fluctuate between high and low resting levels (57) (see Table 6. Pelvic Floor Muscle (PFM) Involvement in PFD).

With or without the presence of incontinence symptoms, problems with bladder urgency and frequency can be distressing for those afflicted. The American Nobel Study found that this form of bladder dysfunction is also highly prevalent and that previous estimates of 17 million Americans and 50 to 100 people worldwide suffering from overactive bladder (OAB) symptoms, such as needing to void frequently and with little or no warning, may actually be understated (58) (see Table 7. Prevalence of PFD: Bladder Dysfunction).

Prevalence of PFD: Bowel Dysfunction

Bowel dysfunction can be embarrassing, frustrating and often devastating. A study looking at the bowel function of women who have given birth, found that 36% experience occasional fecal incontinence and 74% of these parous females experienced incontinence of gas (59) (see Table 8. Prevalence of PFD: Bowel Dysfunction). As with urinary incontinence, studies determining prevalence of anal incontinence vary in their results depending on definitions and populations studied. For example, Whitehead et al., and Bharucha et al., had similar results of 8.9 % (60) and 12.1% (61), respectively, while Varma et al., found that 24% of their general USA population study experienced loss of stool (62). Varma et al., also noted that 71% of the respondents from their study reported difficulties with flatual incontinence, and 40% experienced loss of both fecal matter and flatulence (62) (see Table 8. Prevalence of PFD: Bowel Dysfunction).

Stewart et al., (1990) conducted telephone interviews of more than 10,000 Americans over the age of 18, to determine bowel habits for the previous three-month period. This research found that 14.7% of the participants experienced constipation (63) (see Table 8. Prevalence of PFD: Bowel Dysfunction). Iantorno et al., looked at patient referrals over a 10-year span for evaluation of constipation. Of these patients, those determined to be experiencing functional constipation were further evaluated for colonic transit time, PFM function and anorectal function (64). Functional constipation refers to a healthy bowel that is not functioning properly, often due to diet and lifestyle. This can lead to difficulty with bowel emptying due to colonic inertia, delayed transit or PFM dysfunction. PFM dysfunction (in this study, determined by abnormal straining during anorectal manometry, abnormal balloon expulsion, and defecography testing) was noted

in 76.3% of patients, making PFM dysfunction the most common cause of functional constipation. Slow transit constipation (greater than 72 hours) was noted in 8.4% of patients. Constipation-irritable bowel syndrome (according to the Rome I criteria of functional constipation for greater or equal to three months, straining at defecation at least 25% of the time, lumpy and/or hard stool at least 25% of the time, sensation of incomplete evacuation at least 25% of the time, or two or less bowel movements per week) was found in 10.7% of the patients. The remaining 4.6% of the functionally constipated participants had no other symptoms fulfilling the three categories (64) (see Table 6. Pelvic Floor Muscle (PFM) Involvement in PFD).

Tin et al., investigated the outcome of obstetrical anal sphincter injury in post-partum women known to have had third or fourth degree tearing during delivery. Of the respondents to the study, 89.8% experienced a third degree tear, and 10.2% experienced a fourth degree tear. With regard to loose stool, 19.7% reported anal incontinence, 7.7% experienced leakage of formed stool, and 38.2% had flatual incontinence (65) (see Table 8. Prevalence of PFD: Bowel Dysfunction).

Fareesa et al., acknowledge the concern that, while there is a high prevalence of bowel incontinence, few women seek medical care for their disorder (66). They studied 463 women presenting for urogynecologic care with only 3% of these women reporting bowel emptying difficulties or bowel leakage. Further investigation determined that 83% of these women actually presented with at least one bowel symptom. Incomplete bowel emptying affected 56% of these women, 55% reported the need to strain to have a bowel movement and 54% had difficulties with flatual incontinence (66) (see Table 8. Prevalence of PFD: Bowel Dysfunction).

Prevalence of PFD: Pelvic Organ Prolapse (POP)

Lack of support from below to pelvic organs can lead to the bladder, uterus or bowel sitting in a less than optimum position. While women rely primarily on the connective tissue from above for organ suspension, support from below helps to decrease the downward pull of gravity over time and the extra weight during pregnancy that may stretch this superior support structure (5). By assisting from below, undue strain in the downward direction is alleviated. Once organs begin to protrude caudally, discomfort and even pain may be noted, and most women find organs extending beyond the vagina distressful and embarrassing. Many women note the 'lump' protruding vaginally or rectally when wiping following voiding or defecation. For some this is bothersome for aesthetic reasons, while others are troubled by physical discomfort or even pain.

Furthermore, it is easy to envision that, when the pelvic organs are not supported in their intended position, there may be dramatic impact to the function of the prolapsing organ. Bladder and bowel emptying may be compromised when these organs are falling in a caudal direction, often compressing their outlets. Functionally, this can lead to incomplete emptying of the bladder and/or bowel (5,6). If the bladder is not properly emptied, there is an increased risk of infection, as well as bothersome symptoms such as bladder urgency, frequency and incontinence. When the bowel angle is altered, incomplete bowel emptying can occur leading to constipation and fecal incontinence (6). If the uterus is prolapsing, pelvic pain and sexual dysfunction may result from pressure of the sagging uterus and physical impact of the uterus during intercourse. Sexual and pelvic pain may also result from bladder or bowel prolapse as these organs tend to fall in posterior and anterior directions respectively, in addition to their downward fall with

gravity, causing encroachment in the vaginal canal and again be bothersome due to downward pressure as well as the physical impact during intercourse (67).

In 1999, gynecologist Dr. Bob L. Shull, estimated that 43 million American women over the age of 65 would experience some degree of POP by 2030, almost double from the 23 million women with POP at the time of his prediction (67) (see Table 9. Prevalence of PFD: Pelvic Organ Prolapse (POP)).

More recent statistics appear to support his forecast. In 2004, a Netherlands study showed that 40% of women ages 45-85 experienced significant POP. The researchers in this study noted that poor coordination of PFM contraction was likely to be causative in POP (51) (see Table 6. Pelvic Floor Muscle (PFM) Involvement in PFD), and Table 9. Prevalence of PFD: Pelvic Organ Prolapse (POP)).

As was the case with incontinence studies, the prevalence of POP varies dramatically within the literature due to variations in definitions and populations studied. While Rortveit et al., noted the prevalence of POP to be 5.7% (68), Hendrix et al., noted it to be 41.1% (69), and Handa et al., separated the prevalence of POP into categories with cystoceles measured at 24.6%, uterine prolapse, 3.8%, and rectoceles totaling 12.9% (70) (see Table 9. Prevalence of PFD: Pelvic Organ Prolapse (POP)).

POP is not only physically and emotionally upsetting, it also has dramatic financial impact. It is believed that in the USA over $1 billion is expended for the more than 200,000 annual surgeries related to POP, with 30% being repeated procedures (71) (see Table 9. Prevalence of PFD: Pelvic Organ Prolapse (POP)).

Prevalence of PFD: Pelvic Pain

The International Pelvic Pain Society (IPPS) found that chronic pelvic pain affects 9.2 million American women and 61% of these women do not have a diagnosis (72) (see Table 10. Prevalence of PFD: Pelvic Pain & Sexual Dysfunction). This statistic is extrapolated from the work of Mathias et al., who found that 14.7% of USA woman, ages 18 to 50, reported symptoms of pelvic pain, and $881.5 million per year is spent on directly related medical expenses. Of those employed, 45% stated that their work productivity was negatively impacted and 15% missed work because of their symptoms (73) (see Table 10. Prevalence of PFD: Pelvic Pain & Sexual Dysfunction).

IPPS defines chronic pelvic pain as any pain in the pelvic region for greater than six-months' duration. They state that underlying tissue damage often produces acute pelvic pain. Following six months of pain, the progression of the chronic pain itself becomes the disease and is described as the unrelenting pain leading to changes in behavior and emotion producing a complex that becomes the diagnosis known as "chronic pelvic pain syndrome". IPPS claims that chronic pelvic pain has reached epidemic proportions and remains poorly understood (72).

As with incontinence and POP, due to varying definitions and study populations, there is a range of prevalence findings for pelvic pain. The United Kingdom studies noted prevalence of 3.8% for women ages 15 to 73 (74) and uncovered a pattern of bladder and bowel dysfunction being the most common triggers of the pelvic pain, and not reproductive tract disorders as previously thought (75) (see Table 10. Prevalence of PFD: Pelvic Pain & Sexual Dysfunction).

Prevalence of PFD: Sexual Dysfunction

Sexual dysfunction may be seen in patients with pelvic pain or independent of symptoms of pain. The National Health & Social Life Survey studied 1749 women and found that 43% experienced sexual dysfunction (76). Painful intercourse is just one of the many sources of sexual dysfunction. Other common sources of sexual dysfunction are inhibition or anxiety related to sexual activity, a decrease or lack of pleasure with sexual activity, difficulty or inability to achieve orgasm, and lack of lubrication with sexual activity. Research findings show 11.3% of women experience pain with intercourse (49).

Gordon et al., (1999) examined several bladder dysfunctions related to different etiologies to see if they differed in the effects on sexual function. Overall, sexual function scores in women with detrusor instability were significantly lower when compared with scores of women suffering with SUI or mixed incontinence. This study grouped the females according to age with women over 60 years old labeled as "elderly women" and, those 60 and under being the "younger group". While previous to the completion of the questionnaire only a single woman in the study acknowledged having urinary incontinence during sexual activity, the questionnaire revealed that 3% of the "elderly women" and 29% of the "younger women" had, in fact, experienced this. None of the women in the study sought medical attention for this symptom. The results of this study confirmed the presence of sexual dysfunction in all ages of women suffering with urinary symptoms, especially detrusor instability (also known as overactive or irritable bladder and refers to the sudden need to void) and, therefore, medical assessment of sexual function in all women reporting symptoms of bladder dysfunction is encouraged (77) (see Table 11. Prevalence of PFD: Co-occurrence of PFD).

Studies have shown that, while sexual dysfunction can be associated with PFD such as POP and incontinence (78,79) (see Table 10. Prevalence of PFD: Pelvic Pain & Sexual Dysfunction), improving strength and health of the PFM can improve sexual function, desire and performance including orgasm (80) (see Table 6. Pelvic Floor Muscle (PFM) Involvement in PFD).

Dean et al., looked at women three-months post-partum and again at six-years post-partum, and compared sexual function to birth delivery mode, use of PFM strengthening exercises, and symptoms of urinary and fecal incontinence. This study was based on questionnaire evaluation with 7879 women responding at three-months and 4214 at six-years post-partum. While no statistical significance was noted between delivery mode and sexual function, there was a significant relationship found for sexual function and the remaining two variables. Not all of the participants chose to complete the optional sexual function component of the questionnaire. Of those who did, 17.5% selected the most negative option as their response to at least one of the sexual function questions, indicating significant dysfunction (81) (see Table 10. Prevalence of PFD: Pelvic Pain & Sexual Dysfunction). Women who exclusively underwent caesarean sections had more positive perceptions of sexual satisfaction for both their partner and themselves, compared to women who had experienced vaginal and instrumental deliveries. No other domains in sexual function were significantly different between the two groups (81).

For the women performing PFM exercises compared to those not participating in PFM exercise, statistical significance was noted in 7 of 10 sexual function domains with exercising women scoring higher in all domains of sexual desire, sexual arousal and

orgasm. It should be noted that exercising women with incontinence were separated for analysis and this subgroup did not show significantly better scores for sexual arousal to those not performing PFM exercises. Of the women experiencing incontinence and who were also completing their exercises, sexual pain was higher than in the non-exercising group. The researchers speculate that this finding may be due to the presence of a stronger PFM (secondary to exercise), combined with the apprehension of possible leakage leading to PFM hypertonicity and spasm causing sexual pain. This is supported by the fact that this domain also showed less sexual pain for the continent women performing PFM exercises, compared to those not exercising their PFM (81). Finally, for the incontinence variable, both urinary and fecal incontinence showed significant adverse effect on sexual function. In fact, for bladder and bowel incontinence, adverse effect on sexual function was noted in every possible domain such as pain with intercourse, poor sexual satisfaction, difficulty with orgasm, lubrication and sexual arousal (81).

Prevalence of PFD: Co-occurrence of PFD

Many women experiencing a single PFD will also be afflicted with co-existing PFD symptoms (32,33,82-85) in the remaining organs, often unknowingly, highlighting the necessity for medical practitioners to be aware of, and ask questions regarding, all types of PFD.

In a 2008 study looking at the prevalence of PFD in a sample of 1961 American women, 23.7% of these women had one or more PFD; urinary incontinence in 15.7%, POP in 2.9%, and fecal incontinence in 9.0% of the women polled (82). Another 2008

study found 37% of their 4130 female study sample had at least one type of PFD (SUI 15%, OAB 13%, POP 6%, anal incontinence 25%) (32). This study also noted high co-occurrence in PFD. Of those suffering with bladder dysfunctions (SUI or OAB), 80% had at least one other PFD. For those reporting fecal incontinence, 48% had one or more additional PFD and 69% of the women diagnosed with POP presented with at least one other PFD (32). Similar findings were noted in 2010 when 34% of 2106 women reported at least one PFD (urinary incontinence 69%, POP 8%, fecal incontinence 6%), and again, co-occurrence was high with 18%, 49% and 60% of the women with urinary incontinence, POP, and fecal incontinence respectively, having additional PFD symptoms (84) (see Table 7. Prevalence of PFD: Bladder Dysfunction, Table 8. Prevalence of PFD: Bowel Dysfunction, Table 9. Prevalence of PFD: Pelvic Organ Prolapse (POP), and Table 11. Prevalence of PFD: Co-occurrence of PFD). However, as none of the three studies included forms of PFD such as pelvic and sexual pain, the reported findings of women with PFD may actually underreport the prevalence of all PFD in females.

A 2009 study looked at the presence of co-existing PFD symptoms in 50 women who were seeking medical attention for PFD and compared them with 50 female control participants who had never sought medical attention for PFD. The assessment tool was divided into nine domains; three bladder domains (bladder urgency/frequency, obstructive micturition and urinary incontinence), three bowel domains (defecation pattern, constipation and fecal incontinence), plus three domains for POP, pelvic pain and sexual dysfunction (33) (see Table 11. Prevalence of PFD: Co-occurrence of PFD).

This study found that, of the 50 female patients seeking medical consultation, 100% had co-occurrence of PFD. Only 10% of these women showed co-occurrence of

PFD symptoms confined to a single pelvic organ or related domains; for example, a woman presenting for urinary incontinence also having symptoms of urinary frequency and urinary urgency. Whereas, 90% of the patients presented with co-occurring PFD in unrelated domains such as bladder dysfunction with bowel dysfunction, or, bladder dysfunction plus sexual dysfunction. Of the patients, 88% reported symptoms in three or more of the nine possible domains and one patient had dysfunction in all nine domains (33). A further interesting finding in this study was that of the 50 volunteer control participants who were not seeking and had never sought medical attention of PFD, 94% (47 out of 50) reported at least one PFD (33).

Possible Mechanisms for Co-occurrence of PFD

The common element that anatomically and functionally connects the bladder, uterus and bowel is the PFM as it physically links the pelvic organs and directly impacts the independent function of each. This is the suspected mechanism for the high prevalence in PFD co-occurrence. The PFM has been found to be dysfunctional in 77.2% of patients presenting for urinary, gastrointestinal and sexual symptoms (4) (see Table 6. Pelvic Floor Muscle (PFM) Involvement in PFD).

It is thought that changing behavior to compensate for dysfunction in one pelvic organ often leads to PFM dysfunction and thereby, potentially impacts neighboring organs (4). For example, straining to defecate due to constipation leads to PFM injury that may, over time, negatively impact bladder and/or sexual function.

The IPPS explains that, while chronic pelvic pain may begin in one organ, over time other organs may become dysfunctional as well. They state that this is because prolonged pain may lead to chronic tensing of the PFM and subsequent injury to this muscle. As this muscle is directly related to the other pelvic organs in both proximity and function, these neighboring organs may too become dysfunctional. For this reason, what may begin with uterine pain, perhaps with a diagnosis of endometriosis, may eventually lead to bowel dysfunction and/or bladder dysfunction with corresponding pain in these organs (72). Often the organs affected secondarily produce pain that overshadows the initial pain. This may explain why some women with endometriosis continue to experience chronic pelvic pain even following hysterectomy.

Referral of pain via myofascial pain syndromes may also explain pain in sites other than the origin (57,72). Travell and Simons (86) describe the concept of myofascial pain and how ailing muscles may refer pain to other bodily areas. For the PFM, they provide details suggesting that perineal pain, as well as pain in the urogenital structures, may arise from myofascial trigger points found in the ischiocavernosus and bulbospongiosus muscles of the PFM. They explain that aching perineal pain and dyspareunia (specifically, painful entry during sexual intercourse) can occur from trigger points in the bulbospongiosus muscle. For men, trigger points in this muscle may be a contributor to symptoms of erectile dysfunction. Trigger points noted in coccygeus and levator ani muscles may produce sacrococcygeal and vaginal pain, while trigger points in the sphincter ani muscle of the PFM may produce anal pain and disrupt bowel function and proper emptying. Conversely, defecation may aggravate the levator ani muscle pain.

Additionally, vaginal pain and anococcygeal pain may result from myofascial trigger points located in the obturator internus muscle (86).

There have also been studies looking at the presence of crossover reflexes and their possible role in PFD co-occurrence. Bouvier et al., described the neuronally-mediated interactions between the urinary bladder and the internal anal sphincter of cats, in 1984 (87). Shafik et al., described crossed vesico-urethro-anal reflexes in humans in 2007, noting the existence of reflexes between the urethra and the anal sphincter (88). Both studies were focused on the presence of possible urethra, bladder and pelvic floor cross reflexes. A current study on rats found that colonic inflammation led to detrusor overactivity, showing further evidence of cross-sensitization between the pelvic organs (89), while in humans, rectal distention has been associated with bladder over-activity (90). Further human research in this field is required to confirm this mechanism and its possible role in PFD co-occurrence (87-90).

Finally, somatization, the psychiatric diagnosis for repeated complaints of a variety of physical symptoms of which no physical origin has been identified, has been indicated as a consideration for the high prevalence of PFD co-occurrence and may explain the significant finding that 20% of patients with irritable bowel syndrome also report symptoms of chronic pelvic pain (91). As this is a very recent theory, further research is needed to determine the connection of somatization in PFD co-occurrence.

Emotional and Psychological Impact of PFD

Millions of Canadians suffer with varying forms of PFD, often leading to significant negative impact on their QoL. Bladder dysfunction, for example, can lead to emotional disturbances and social isolation (2,58) (see Table 12. Consequences of PFD). The 2003 ICS study noted earlier, stated that the impact of SUI included negative effects on career, physical activity, intimacy and sex, self-confidence and self-esteem, social activity, freedom and vitality, and the researchers found that nearly half of the women with SUI symptoms were too emotionally uncomfortable to discuss their symptoms (2).

Despite these negative influences, both physically and emotionally, resistance to seeking medical attention remains an obstacle. A study by Pharmacia Canada found that approximately 2.9 million Canadians suffer from OAB symptoms, yet less than 20% seek treatment. They showed that enjoyment and frequency of sexual relationships are negatively affected in more than 50% of those afflicted with OAB symptoms and close to 20% have chosen not to participate in romantic relationships because of their bladder dysfunction. OAB symptoms negatively impact hugging and cuddling and many participants withdrew from intimacy altogether (92) (see Table 7. Prevalence of PFD: Bladder Dysfunction, and Table 12. Consequences of PFD).

The American Nobel Study, noted earlier, showed that people affected by OAB symptoms often feel that their lives are being controlled by their bladders, and become reluctant to leave their homes. This can have a devastating effect on these individuals mentally and physically, as their worlds become smaller in social contacts as well as geographically, since they prefer to stay near their homes and washroom facilities (58).

Davis et al., concluded that raising PFD awareness toward both the public and professional sector was imperative, with focus directed to the consequences of childbirth, following their research findings that embarrassment, sexual inhibition and social isolation were the result of PFD. This led to their proposal to dismiss the "doctor knows best" philosophy and promote awareness and informed decision-making within the female population (11) (see Table 12. Consequences of PFD).

Numerous medical and psychological conditions have been associated with PFD. While the medical complaints of perineal dermatological rash and infection, urinary tract infection, ulcerations, falls and fractures are distressing, the psychological impact of embarrassment, sleep disturbances, social isolation, stigmatization and depression are often noted as more disturbing (11,50,58,93) (see Table 12. Consequences of PFD).

PFD has been implicated as producing a negative effect on one's career (2,94). A study by Fultz et al., found urinary incontinence to be highly prevalent among employed women and, when asked whether or not their bladder was an issue at the workplace, 88% of the women with the most severe incontinence symptoms stated that their physical activity was compromised. In addition to reports of physical detriment, they also noted mental and emotional disturbances. Some examples of the concerns observed in this study were loss of the ability to complete tasks without interruption, impaired concentration, and diminished self-confidence (94) (see Table 12. Consequences of PFD).

The impact of chronic pelvic pain has been shown to persist over many years, often filled with medical 'misadventures' and disappointment, while suffering of physical pain becomes superimposed on the heartbreak of marital conflict and divorce, and further

complicated by the frustration and fear surrounded by loss of employment (95) (see Table 12. Consequences of PFD).

Current Treatment Options for PFD

Various treatment options are available for PFD including pharmaceutical, surgical, psychology and physiotherapy options. While research to support the most effective treatments is necessary and ongoing, the following are choices commonly selected and often beneficial for patients.

Pharmaceutical Treatment Options

Anti-cholinergics, tricyclic anti-depressants, and selective serotonin reuptake inhibitors (SSRI's) are the three categories of medications used to manage symptoms of urinary incontinence (96). Laxatives may be prescribed for bowel dysfunction; however, often diet and lifestyle alterations are effective. Pain medication, such as amitriptyline is often used for patients suffering with pelvic pain, both for helping patients tolerate the discomfort, and also to assist in sleeping, as disturbed sleep is a common PFD complaint (97), leaving them more susceptible to pain. Other therapies often indicated are hormone replacement medications, topical steroids and anti-depressives drugs (96).

Surgical Options

Numerous surgical options are available for the various forms of PFD. The most common are bladder and POP surgeries, with choices in approach between vaginal and abdominal, or a combination of both. As well, laparoscopic procedures are appropriate

for certain conditions and specific patients. The use of mesh has been shown to be effective for bladder and POP surgeries and has become a preference for many surgeons, in order to produce longer lasting surgical results. Popular examples of mesh surgeries for bladder incontinence are the Tension-free Vaginal Tape (TVT) and the Tension-free Vaginal Tape Trans-Obturator approaches (96).

Additional PFD Medical Treatment Options

Periurethral injections of bulking agents have proven to be effective in the treatment of PFD. The bulking agent (such as Durasphere or Macroplastique having replaced the previous choice of collagen) is injected trans-urethrally to the urethral submucosa at the bladder neck (96,98). Use of botulinum neurotoxin (Botox) injections is showing promising results for treatment of PFD symptoms such as bladder urgency and pelvic pain (99,100); however, further investigation is indicated.

A more conservative treatment option for incontinence, and/or POP, is fitting patients with an orthotic ring known as a pessary. This offers support to the pelvic organs such as the bladder, uterus and bowel when prolapsed, as well as to improve symptoms of urinary incontinence by assisting in closure of the urethra (96,101).

Psychological Care

PFD patients suffering with chronic pelvic pain or sexual dysfunction often require the expertise of a psychologist (102). With the emotional consequences of PFD, combined with an association to depressive tendencies, psychologists play a significant role in the treatment of patients with PFD, as well as their families. Debilitating pain, especially pain that threatens the intimate relationship between loved ones, is often not

correctable without the combination of physical therapy plus the guidance and treatment from a mental health professional (102). Furthermore, if a connection is confirmed between somatization and PFD, psychological care in treatment of PFD would be further necessitated.

Pelvic Floor Physiotherapy

As the PFM has been found to be dysfunctional in 77.2% of patients presenting with urinary, gastrointestinal and sexual symptoms, and because it is the common element that anatomically and functionally connects the bladder, uterus and bowel, every patient with any form of PFD should receive pelvic floor physiotherapy consultation (4). The basis for PFD physiotherapy consists of education regarding the physiology of one's condition, the importance of proper PFM strengthening and relaxation as appropriate, proper voiding and defecation patterns and biomechanics, and diet and lifestyle education (9,96, 102-105). Additionally, some patients benefit from modalities such as cryotherapy, thermotherapy, acupuncture, laser therapy, neuromuscular electrical nerve stimulation (assists in eliciting PFM) contraction), or diagnostic ultrasound or computerized EMG biofeedback for assistance in identifying PFM and isolating this muscle contraction (96,102-105). Since this muscle is prone to myofascial syndromes, trigger point release techniques and soft tissue massage may also prove beneficial (57,86,96,102-105).

Most major cities across Canada have physiotherapists with post-graduate training in pelvic floor health. The Canadian Physiotherapy Association is currently creating a mentorship program to assist in this area in hopes of augmenting the resources available to women across the country. This is still in the development stage as resources are limited and not all areas in Canada offer pelvic floor physiotherapy. Lack of available

trained pelvic floor physiotherapists and the fact that many work in the private sector requiring fee for service, remains a challenge for some women in seeking treatment.

Raising Awareness of PFD & Available Treatment Options

According to the American Urogynecologic Society (AUGS), PFD is experienced by as many as one out of three women and 80-90% of these women note significant improvement if they seek help (106). Recent research has shown that for women 40 years of age and older, approximately 41% suffer from urinary incontinence with most grading their symptoms as moderate to severe, and yet less than 30% will seek medical attention. Furthermore, only 12% of these women are examined by a pelvic floor specialist. This study highlights the crucial fact that women in society, as well as primary care providers, need to be educated about this treatable form of PFD (107).

In response to the concerns that primary care providers may not be asking their patients all the questions necessary for a thorough examination, and not directing patients toward conservative medical management as a first-line of defense, the AUGS encourages completion of a Continuing Medical Education online PFD course, through the Duke University School of Medicine. This series created for Women's Primary Care Providers is entitled, "What Patients Don't Tell and Doctors Don't Ask…Incontinence and Prolapse-Starting the Conversation." and explains that not only are these questions necessary for complete assessment but that patients deserve to be asked these questions regarding symptoms that may too easily go unidentified. This three-module online certification prepares primary care providers with the questions necessary to prompt

patients to openly discuss issues with PFD, and instructs providers to not allow patients to believe that PFD is simply a part of aging or a normal experience. AUGS stresses the importance of enlightening patients on the life-altering psychological impact of PFD (such as loss of self-esteem and the high risk of depression), the negative social impact (avoidance of social gatherings and involvement with friends and community), the often devastating sexual consequences (such as loss of libido and the feeling of no longer being desirable or attractive), and also the dramatic economic sequelae (personally and societally). Since proper medical intervention shows significant improvement for most individuals, and the corollary of accepting PFD as a normal part of life leads to dramatic loss in QoL, it is imperative that medical providers be active in encouraging conservative measures such as the necessity of healthy dietary and lifestyle alterations and appropriate PFM exercise prescription via referral to a properly trained pelvic floor physiotherapist as a first-line defense strategy. Following this, more invasive medical interventions such as pharmaceutical options and surgical approaches are indicated as appropriate (108).

A recent study investigated whether or not a racial difference existed between community-dwelling black women and white women when seeking healthcare for bladder incontinence. The results of this study showed that these two populations sought medical attention in much the same way, both with notably low rates. The reason for not seeking medical attention given by almost 95% of participants was that they did not know that treatment existed. The researchers of this study identify a need for public education to encourage women to seek medical care (109).

While most women have, or will experience pregnancy and birthing, and since vaginal delivery and other birthing interventions such as forceps delivery have been

shown to be risk factors of PFD (110), it is concerning that current research focusing on the information given by obstetrical providers, even in centres with urogynecology divisions, shows that PFD risk counselling is lacking, often non-existent, in prenatal care (111).

The three-module PFD course offered by the AUGS addresses this concern by encouraging medical specialists, and not just primary care providers, to complete the entire online certification thereby building awareness of co-existing PFD in pelvic organs outside of their scope of day-to-day practice and, perhaps, their comfort zone for treatment and referral practices. For example, urologists will benefit from the 'Anal Incontinence' module just as colo-rectal surgeons are urged to participate in the 'Bladder Incontinence' and 'POP' modules in an attempt to identify co-occurring PFD and arrange for medical care accordingly (108).

Furthermore, the available surgical options surrounding incontinence and POP are currently under scrutiny and are globally being re-evaluated as to the benefits versus potential risks, and even harm, caused by urogynecological procedures involving implantation of polypropylene mesh. The United States Food and Drug Administration (FDA) released its second warning (July 13, 2011) entitled, "Complications Associated with Transvaginal Placement of Surgical Mesh for Pelvic Organ Prolapse". This warning was directed to medical practitioners and to women who have had or are considering having surgical mesh procedures, and stated that the possible serious complications from mesh insertion (such as mesh erosion, pain, pain during intercourse, organ perforation, urinary problems, bleeding and infection) are not rare.

In response to the FDA warning, a statement on behalf of the Pelvic Surgeons Network pointed out that all of these surgical risks, with the exception of mesh erosion, exist with traditional native tissue repairs as well. This group referred to the uterosacral ligament suspension, a non-mesh procedure commonly used in the United States, as having an 11% risk of ureteral injury alone. Additionally, they state that there is a relatively high failure rate in non-mesh surgical procedures and that both mesh and non-mesh procedures are based on limited long-term research (112).

Another recently identified complication to the mesh procedures is 'partner dyspareunia'. A 2012 case report cites six cases where mesh implantation has caused pain to their sexual partner, with two of these cases reporting penile injury directly caused by the mesh implanted during pelvic reconstructive surgery. The authors of this case report urge surgeons to counsel patients preoperatively to the possibility of this more recently presented complication (113).

Regardless of whether the surgical procedure includes mesh implantation or native tissue, it is clear that these operations come with risks. The FDA warns that patients considering mesh surgical procedures must be educated to the possible postoperative complications, as well as the fact that limited long-term data exists for informed consent to be considered. This is yet another example where raising awareness in the field of PFD is critical. The Society of Obstetricians and Gynaecologists of Canada (February 2011 in response to the February 2010 Health Canada warning from the Health Products and Food Branch) recommend that individual and thorough counselling of patients to the risks and benefits is essential with regard to these procedures and ensure surgical training be specific to the type of mesh used, while the AUGS and the American

College of Obstetricians and Gynecologists suggest that POP vaginal mesh procedures be offered only to high-risk patients whose benefit will justify the risk (114). The International Urogynecological Association suggests its members proceed "slowly and carefully lest we do considerably more harm than good" (115).

While family physicians often refer patients directly for surgical consultation, it is evident that the risks involved with all procedures preclude surgery from being a consideration as a first-line of defense. Enlightening primary care medical practitioners, as well as the public, to conservative management such as healthy diet, behavioural strategies and proper PFM exercise education is necessary as the fundamental focus. These conservative protocols may be augmented with medical treatment options such as pelvic floor physiotherapy as required.

While PFD is highly prevalent and has been shown to produce physical and psychological symptoms ranging from embarrassing to debilitating, it is important to recognize that much can be done to remedy these conditions. Often ensuring good PFM health improves or corrects PFD. As well, a healthy diet and lifestyle, combined with diligence in proper PFM strengthening, can often prevent PFD from arising. Since all women are at risk of PFD, especially those who have experienced, or plan to experience, childbirth (22,116), taking a pro-active approach to ensuring a healthy pelvic floor is the key to prevention of PFD. Increasing PFD awareness to encourage the seeking of available treatment options, including pelvic floor physical therapy, psychological, pharmaceutical, and surgical intervention, can have a profound effect on the lives of women experiencing PFD. Furthermore, clearly these medical treatment options should

be implemented from the most conservative approach followed by more invasive options to avoid unnecessary risk and even possible harm.

FINDING A STANDARDIZED OUTCOME MEASURE

The clinical focus of medical health professionals working in the field of pelvic floor health is to positively impact the lives of patients suffering with PFD on both subjective and objective levels. Their goal is to provide a reduction or resolution in frequency and intensity of the PFD symptoms, which led their patients to seek medical attention, as well as, to improve their QoL. To determine whether or not the goals were achieved, quantitative measuring tools, proving to be valid and reliable, are required to detect modification in PFD symptoms and QoL levels, following treatment.

Additionally, it has been identified that generally women's knowledge and awareness regarding pelvic floor health and PFD, including bladder and bowel dysfunction, POP, pelvic pain and sexual dysfunction, is limited at best, and that this may be a precipitating factor for the high prevalence of PFD in society (1,2,13-15). To rectify this, awareness-raising campaigns have been shown to be warranted (1,2). To determine if the education seminars have been successful in their goals of knowledge-acquisition, objective assessment indices are vital to ascertain awareness levels pre- and post-intervention.

For this research study, it was necessary to, firstly, identify and evaluate the objective measuring tools currently available that quantify the presence of PFD symptoms and QoL levels for those afflicted with PFD, and, secondly, to identify and evaluate the accessible scales that quantify the knowledge base concerning pelvic floor health. Each instrument was analyzed to determine its advantages and disadvantages, as well as isolating the outcome or outcomes measured by each tool (see Table 13a. PFD Symptom & QoL Questionnaires, and Table 13b. Knowledge-Acquisition

Questionnaires). In this way the most suitable objective measuring devices were identified, selected and implemented in the research study.

Available Indices for Measurement of PFD Symptoms and QoL

While standardized tools for PFD research and clinical application do exist, a thorough literature review found that the numbers of validated questionnaires is limited. Furthermore, these questionnaires have been developed by specialists representing various medical fields such as urology, gynecology, gastroenterology and pelvic floor physiotherapy and, therefore, understandably, have different aims and pelvic organ-specific goals. As tools available addressing all facets of PFD are scarce, practitioners often choose to use multiple forms of assessment so that, in combination, all general functions of pelvic floor health can be measured.

Until recently, the gold standards for pelvic floor research included the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ) (117), the King's Health Questionnaire (KHQ) (118), the Prolapse Quality of Life (P-QOL) (119), the Pelvic Floor Distress Inventory (PFDI) (31) and the Pelvic Floor Impact Questionnaire (PFIQ) (31). While these are very useful tools in research, with the exception of the PFDI/PFIQ, they were designed with the intent to focus segmentally on PFD or QoL, or relate to a highly condition-specific population.

The more recent contributions to pelvic floor research are the Electronic Pelvic Floor Assessment Questionnaire (e-PAQ) (120) and the Pelvic Floor Inventories Leiden

(PelFIs) (1). Both of these newer instruments encompass all facets of PFD (urinary and bowel dysfunction, POP, pain and sexual dysfunction) (1,120).

Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ)

A self-administered research tool, later to become a globally relied upon assessment device and significant contribution to the study of pelvic floor health, was released in 2001 following successful outcomes to rigorous testing and validation (117). The PISQ is designed for assessing sexual function in women with urinary incontinence and/or POP. Its 31 items, three-domain design, focus on behavioral/emotive, physical and partner-related domains for female sexual function. These three domains were identified through factor analysis and high correlation was noted between the PISQ and the Sexual History Form-12 ($r= -0.74$; $P<0.001$). Individual domains were also shown to be highly correlated when the behavioral/emotive and partner-related domains were compared to the Sexual History Form-12 ($r= -0.79$ and -0.5, respectively; $p<0.001$), and the physical domain was compared to the Incontinence Impact Questionnaire-7 ($r= -0.63$; $p=0.006$) (117). K values of 0.56 to 0.93 determined moderate to high ratings of reliability upon test-retest evaluation (117).

Questions are based on a single-stage Likert format summative scale (121), offering five selections for each of the 31 items. The choices range from “Always” (or “Every day”, depending on the question) to “Never” with the highest symptom-frequency option, such as “Always” scoring zero, and the fifth and most infrequent symptom-frequency option of “Never” scoring four, and some items have been reverse-scored as appropriate. Questions relate to frequency of sexual activity and feeling toward that

frequency, partners' physical restrictions with sexual activity, such as problems with erection or premature ejaculation, and to the participants' physical difficulties during sexual activities, such as how frequently and by what means they are able to reach orgasm. Also assessed are one's desire and libido responses, and pain or physical restrictions with sexual activity. The participants are questioned as to the effect their incontinence and/or POP symptoms have on their desire and physical comfort, as well as whether embarrassment regarding these PFD symptoms impacts sexual activity and to what degree. Satisfaction questions throughout the survey assess the feelings of both partners.

In 2003, the short form PISQ, or PISQ-12, was released following successful validation ($r= 0.92$; $p<0.05$) and moderate to high reliability (k values ranging from 0.56 to 0.93) outcomes (122). This survey maintained the self-administered design and, as its name suggests, consisted of 12 items with the same goals of evaluating the sexual function of women with urinary incontinence and/or POP. Also, the final score determined by the PISQ-12 can be compared to the 31-item long version by multiplying the final score by 2.58 (31/12).

The advantages to the PISQ for use as an outcome-measuring device are numerous. Most importantly, it has been shown to be valid and reliable and has been used for almost a decade for global research. Secondly, the advent of the short-version PISQ reduced the burden of time and cost to participants and administrators. Both in short and long form, the PISQ are respected for ease of administration and completion for respondents (117).

The same holds true for its straightforward approach for scoring the evaluation tool as the scores are simply summed and divided by the number of responses to determine the mean. In this way, it can accommodate for missing values if an item produced no response.

Each of the 31 items offers five choices for response, which is a commonly used and acceptable number of selections. If too few choices are offered, for example two choices, there is the risk of losing assessment of the strength of the attitude and focusing more on evaluating the directional dimension of attitude. However, if too many choices are offered, for example with seven or more choices, participants can have difficulty discriminating between choices (123-125).

While the PISQ focuses on the sexual function of women experiencing urinary incontinence and/or POP symptoms, the PISQ also accounts for QoL evaluation in this population. This QoL measurement is an additional positive contribution of the tool; however, the fact that the PISQ is so specific to the dysfunction it assesses, is both a pro and a con depending implementation. For areas of research specifically analyzing the sexual function when urinary incontinence or POP are present (which was the intent of the PISQ creators), this is a highly beneficial tool. That withstanding, its use is limited to that specific area and conclusions drawn from data collected from this instrument cannot be generalized to any other population or offer information for anything separate from the sexual function of those women with bladder leakage and/or POP.

Limiting the PISQ is the fact that it does not allow for assessment of urinary incontinence or POP symptoms but, since it is highly condition-specific, seeks

information only for the sexual function of women who have one or both of these disorders and how this impacts their sexual function.

Another disadvantage of the PISQ is the limitation of collecting ordinal versus the desire to gather interval-level data. The data collected from these Likert scales contains an inherent sequence and are, therefore, considered ordinal level data as the responses can be listed in an order that makes sense. Unfortunately, this data is not considered at the next level of data sophistication, or interval-level data, as there is not an equal distinction between each of the five choices. For example, the selections of "Every day", "1 to 3 times a week", "1 to 3 times a month", "Less than once a month", and "Never" display sequential meaning, however, there is no equality between each selection (126). Nevertheless, many of the items use a scale of "Always", "Usually", "Sometimes", "Seldom", and "Never". As these have a higher equivalency between choices when compared to the previous options list, there is an argument for considering this data to be ranked higher than simply ordinal level (127). As these choices offer symmetry between them, it has been suggested that this data be viewed as falling somewhere between ordinal and true interval-level data (127). This consideration is seen for segments of each of the PFD symptom-scales analyzed.

King's Health Questionnaire (KHQ)

The KHQ is another highly beneficial tool that has been shown reliable, responsive and valid following rigorous testing (118). The 29 items included on this device pertain to the physical, social, personal and role limitations impacted through bladder function, such as its effect on household tasks, work life, activity levels, travel plans, social interaction, relationship and sexual activity, emotion, and energy and sleep

levels. Some items relate to behavioral changes in response to the leakage but the KHQ does not actually track the quantity of PFD symptoms. The final questions relate to the amount of bother that these bladder symptoms have on the participant's life. All of the 29 items are designed in a Likert-scale format with the choice lists altering from offering three to five selections depending on the question (118).

Upon psychometric analysis of the KHQ responses, Cronbach's alpha was measured ranging from 0.70 to 0.91 for all domains. All but two items evaluated ('pads' and 'fluid') found correlations of greater than the pre-determined, accepted threshold of 0.4, showing internal consistency of the document. This device was shown responsive to noting significant change ($p<0.05$) over time in all domains except 'general health' (118).

The advantages of the KHQ survey are several. This self-administered, validated tool is easy for respondents to complete, accessible in several languages, and also, available in a short version, the KHQ-7. Furthermore, since its release in 2003 it has been widely employed and highly regarded for the use of urologic research and clinical application. Another benefit of the KHQ is its extensive assessment of QoL for those experiencing urinary incontinence.

The data collected from this tool would fail to meet the true definition of interval-level data; however, the KHQ offers all items on a symmetrical scale and, therefore, the data collected offers a possibility of being considered higher than ordinal level (127).

Disadvantages to the KHQ are its poor accommodation to the 'Not Applicable' responses offered in the personal relationship domain, and the cumbersome scoring format since each section must be completed separately to allow for the varying number of choice selections (118).

The most significant disadvantage is the limited use of the KHQ, for overall PFD measurement, as it is highly condition-specific in design. The KHQ is focused to the field of urinary incontinence and, as such, is not useful for assessing details related to bowel dysfunction, POP, pelvic pain and sexual dysfunction. While the KHQ is a valuable contributor to the field of urology, it is limited in its usefulness when viewing PFD as a whole.

Prolapse Quality of Life (P-QOL)

The P-QOL is a simple to use survey tool that has been shown valid and reliable for assessing the symptoms and severity of these symptoms related to POP, as well as the effect and impact that these POP symptoms are having on QoL. The P-QOL consists of 20-items and nine domains. Its nine domains consist of general health, the impact of POP, role limitations, physical limitations, social limitations, personal relationships, emotions, sleep and energy levels, and severity measurements (119). Separated, but also rigorously tested for validity, are an additional 18 questions related to bladder and bowel health, as well as sexual function. These Likert-styled items are scored on the summation of the response given to the four or five choices offered (119).

Three evaluations were used to determine validity of this document. Firstly, missing data levels were measured and a range of 0 to 6% (mean=2%) were noted and researchers deemed this as acceptable. Secondly, responses to the P-QOL were compared to physical vaginal assessment findings and these were found to be strongly correlated using Spearman's rank correlation analysis ($rho>0.5$; $p<0.01$). And finally, Mann-Whitney U testing found significant differences between the responses of the symptomatic group and the asymptomatic group tested ($p<0.001$). Inter-rater reliability

was noted with Cronbach's alpha being greater than 0.80 for all items found on the final version (119).

Notable advantages to the P-QOL are that this tool is simple to complete, straightforward to score and is a self-administered questionnaire in its assessment of QoL. Also, a significant advantage of this questionnaire is the fact that it has been translated and validated in numerous languages such as Italian (128), Turkish (129), German (130), Portuguese (131), Slovakian (132), Thai (133), and Dutch (134) languages, thereby offering global use and ease of comparability.

The other advantage of this questionnaire is that it was the first tool to encompass all aspects of PFD such as bladder, bowel, and sexual health. A significant drawback to the P-QOL, however, is that it does so for a very specific population, only those afflicted with POP. While it is considered to be a fully encompassing assessment tool for all aspects of PFD, it only assesses this for women who have POP. For example, for women experiencing sexual dysfunction but not POP, this tool would not be appropriate.

Another characteristic, which may be viewed as a disadvantage is, this 38-item tool (20-items originally plus the additional 18 bladder, bowel and sexual health items) is not offered in a shorter version at this time. As with the previous tools evaluated, the data collected from the P-QOL fails to meet the true definition of interval-level data, however, as all choice selections form a symmetrical scale, the data collected offers the possibility of being considered higher than ordinal level (127).

Pelvic Floor Distress Inventory (PFDI) and Pelvic Floor Impact Questionnaire (PFIQ)

The PFDI and PFIQ indices are the first tools considered to fully encompass the scope of PFD. Historically, these two questionnaires were based on the validated Urinary Distress Inventory (UDI) (135) and the Incontinence Impact Questionnaire (IIQ) (135) which focused on bladder dysfunction and its impact on QoL. The PFDI and PFIQ scales added questions related to bowel dysfunction and POP so that the PFDI became an assessment tool for the domains of colorectal-anal distress, urinary distress and pelvic organ distress, while the PFIQ assessed the impact of these three domains against QoL factors (31).

The PFDI consists of 61 items divided into three separate scales, which assess the distress women have related to their PFD symptoms. The UDI offers 28 items related to bladder dysfunction, the Colorectal-Anal Distress Inventory (CRADI) consists of 17 items regarding bowel dysfunction, and the Pelvic Organ Prolapse Distress Inventory (POPDI) contains 16 POP-related questions and their level of bother (31).

The PFIQ assesses the impact of these PFD symptoms and consists of 91 items that are separated into three scales corresponding to the PFDI scales. The IIQ offers 31 items focusing on bladder dysfunction symptoms. The Pelvic Organ Prolapse Impact Questionnaire (POPIQ) also consists of 31 items and these relate to symptoms of POP. Finally, the Colo-Rectal-Anal Impact Questionnaire (CRAIQ) offers the remaining 31 items relating to symptoms of bowel dysfunction. Each section includes questions addressing pelvic pain and sexual dysfunction (31). All of the items follow a Likert-scale design.

The PFDI was found to have good internal consistency, with Cronbach's alpha=0.88, and the internal consistency of the PFIQ found to be excellent, with Cronbach's alpha=0.98, confirming reliability of these tools. Additionally, test-retest reliability was established with an overall Intraclass Correlation Coefficient (ICC) of 0.87 for the PFDI and 0.86 for the PFIQ, exceeding the pre-determined acceptable threshold of 0.75. Face and content validity were confirmed by expert panels evaluating the scale and subscale content of both tools, to show that items measure what they intend to measure, and that all aspects of the topic are being represented in the document items. To evaluate construct validity of the PFDI and PFIQ, symptom severity, interview responses and pelvic floor diagnoses were used. Weekly urinary incontinence episodes were found to significantly correlate with both the UDI ($p=0.26$; $P<0.05$) and the IIQ ($p=0.46$; $p<0.0001$). Stage of prolapse was shown to significantly correlate with both the POPDI ($p=0.32$; $p<0.01$) and the POPIQ ($p=0.33$; $p<0.01$). And, finally, the CRADI ($p=0.49$; $p<0.0001$) and CRAIQ ($p=0.30$; $p<0.01$) significantly correlated to monthly fecal incontinence episodes (31).

The significant advantage of this tool is that it is considered 'all-encompassing' to every aspect of PFD, as it evaluates bladder and bowel dysfunction, prolapse, and also, pain and sexual dysfunction. As well, the PFDI and PFIQ are self-administered tools and have been found easy to administer as well as score, and have successfully stood rigorous testing for validation and reliability (31). A significant advantage for PFD research was noted when these devices became accessible in short forms in 2005, with the PFDI offering 20 items based on a two-step Likert design, and the PFIQ consisting of seven single-step Likert questions. In the two-step Likert design, or 'unfolding' format, on the

PFDI the participants are first asked if they experience the symptom, and if so, they are then asked to complete the second step of the item and rate the severity of that symptom (121).

The short-versions PFDI-20 and PFIQ-7 have also been found valid and reliable (see Appendix 2a. Pelvic Floor Distress Inventory-Short Form (PFDI-20), and Appendix 2b. Pelvic Floor Impact Questionnaire-Short Form (PFIQ-7)). For the PFDI-20, each scale, UDI ($r=0.86$; $p<0.0001$), POPDI ($r=0.92$; $p<0.0001$) and CRADI ($p=0.93$; $p<0.0001$) demonstrated significant correlation to their corresponding scale of the long version format. Significant correlations for all three scales, IIQ ($r=0.96$; $p<0.0001$), CRAIQ ($r=0.96$; $p<0.0001$) and POPIQ ($r=0.94$; $p<0.0001$) were also demonstrated when comparing corresponding scales of the PFIQ-7 to its original long version. ICC ranges of 0.70 to 0.93 ($p<0.001$) support good to excellent test-retest reliability findings, for each scale (136).

These tools became the gold standard for assessing all aspects of PFD symptoms and related QoL, and evaluation with these questionnaires has been widely used for almost a decade and respected for use in both clinical application and research. They are appreciated for their simplistic, yet thorough investigation of all forms of PFD (136).

These instruments again made an impressive contribution when, in 2008, the short versions of the PFDI and PFIQ were found valid and reliable for electronic use and offered an alternative to the paper-based option. When web-based and paper-based tools were compared, the PFDI-20 demonstrated an ICC=0.91 ($p<0.001$) and the PFIQ-7 showed an ICC=0.81 ($p<0.001$). Additional to these significant findings was the fact that

53% of the participants reported a preference to the web-based format, with only 24% preferring the paper-based version (21% had no preference) (137).

The criticisms for these objective measuring devices are that, while they meet the criteria for being considered all-encompassing for evaluating PFD, the components of pelvic pain and, to a lesser degree, sexual dysfunction, while present, are arguably limited in item representation.

As with the previous devices, the data collected from these tools would again fail to meet the true definition of interval-level data, however, once again, as all items offer choices that form a symmetrical scale, the data collected offers the possibility of being considered higher than ordinal level (127).

Electronic Pelvic Floor Assessment Questionnaire (e-PAQ)

The e-PAQ fulfills the critical criteria of being 'all-encompassing' to all facets of PFD (items relate to bowel and bladder dysfunction, prolapse, pelvic pain and sexual dysfunction). Its 14-domain version was shown to be valid and reliable in 2006 and reported to be a user-friendly clinical tool (138). This research was based on a 14-domain document, which has now been altered to a 19-domain tool consisting of five bladder scales, five bowel scales, four scales relating to the vagina, and five scales based on sexual function (120). This upgraded adaptation is now referred to as the ePAQ-PF and produced valid and reliable results when tested in 2008. All of the 19 domains exceeded the pre-determined threshold for internal reliability of 0.70. Items were compared to their parent-domains and all correlation coefficient findings met, or exceeded, the required 0.40-threshold (range 0.40-0.90; $p<0.05$) necessary to establish good internal consistency

of the 19 domains (120). Most items offer four Likert-style choices of "Never", "Occasionally", "Most of the time", and "All of the time".

The electronic component of this tool makes it user-friendly and easy to self-administer for those seeking a validated, online tool for QoL and PFD symptom assessment. For others preferring a paper tool, this questionnaire would not be an option, as it is not offered in that format. The need for computerized equipment and the skills for its use may be a limitation or at least a consideration for this tool in certain cases.

As the ePAQ-PF is not offered in a short version at this time, the length of the document and time needed to complete the survey are a disadvantage. Of the 19 domains, over 120 questions relate to bladder and bowel function, plus, approximately 100 additional questions relate to sexual function and vaginal health, making the complete document lengthy and daunting to complete.

Also, some of the data collected from this tool could only be classified as ordinal data; however, many of the items provide symmetrically-scaled responses and, therefore, offer the possibility of being considered higher than ordinal-level data (127).

A final concern for this instrument is that the scoring system remains cumbersome at this time. It is expected that a future short version of this assessment device will address its current shortcomings and be a promising contributor to pelvic floor research and clinical assessment (138).

Pelvic Floor Inventories Leiden (PelFIs)

The PelFIs has been shown to be valid and reliable in the Dutch language (1) and recently in the English language (27). The PelFIs is a fully encompassing measuring tool and its completeness in all domains of PFD allows the PelFIs to identify yet-undiagnosed

co-occurrence of PFD in patients seeking treatment for a single PFD. This tool offers standardization and ensures thoroughness in history-taking, leading to higher quality patient care, both in the clinic and for use in future PFD research (1).

The PelFIs is unique as it is an administered questionnaire. The Dutch-language PelFIs consisted of an 83-item instrument with nine separate domains measured. During the validation of the Dutch-language PelFIs, it was noted that certain domains did not sufficiently investigate all corresponding symptoms, and to correct this deficiency, items were added into these domains on the English-language PelFIs (1). The English-language PelFIs consists of nine domains with additional questions producing a 149-item instrument. Of the 149 questions, the initial 50 constitute medical intake evaluation while 14 QoL questions are interspersed throughout the document. The remaining 85 questions fall under specific domains of PFD. The domains consist of questions that have been grouped together according to clinical relevance. There are three bladder related domains; Micturition Pattern (17 items), Urinary Incontinence (eight items) and Obstructive Micturition (10 items), three bowel domains; Defecation Pattern (nine items), Fecal Incontinence (16 items) and Constipation (five items), and the three remaining domains are; POP (six items), Pelvic Floor Pain (seven items) and Sexual Dysfunction (seven items).

The English-language PelFIs consists of several formats of questioning. There are some ‘fill in the blank’ questions, although the majority of questions follow a Likert-scale format for summative analysis (121). Selections vary throughout the measurement tool offering between two and seven selection choices, and changing between ‘yes/no’ scales, ‘never, seldom, sometimes, regularly, always’ scales, and scales offering numerical

values such as ‘2-4 x per day, 5-7 x per day, 8-10 x per day, more than 10 x per day’. Some of the questions vary from true ‘Likert-style’ form by offering the selection of ‘other’ followed by ‘please indicate’ and allowing space for explanation.

Interspersed throughout the form are visual analogue scale questions for participants to complete by crossing the line in the position best reflecting their feeling toward a symptom at that particular moment. Those are the only questions physically completed by the participant since all other items are asked and recorded by an administrator.

Construct validity of the PelFIs was established by quantifying the differences in prevalence of PFD between the patient population and the control population. Very significant findings of $F=10.83$, $p<0.0001$ were found for the document as a whole. T-tests for the domain comparisons showed significance for all nine domains ($p<0.0001$ for all domains with the exception of domain Defecation Pattern, which found significance at $p=0.0048$). Content validity was attained by experts, and additional information gathered for further improvement of this tool. Test-retest reliability for all domains was established with $ICC=0.905$, $p<0.0001$. No significant differences were found between Time 1 and Time 2. Internal consistency was obtained with significant Pearson’s Correlation of $r=0.72324$ ($p<0.0001$) for domains Obstructive Micturition and Urinary Incontinence, $r=0.73703$ ($p<0.0001$) for domains Pelvic Floor Pain and Constipation, and $r=0.87025$ ($p<0.0001$) for domains Sexual Dysfunction and Pelvic Floor Pain. Four additional domain combinations approached significant findings. Cronbach’s alpha was found to be greater than 0.70 for all domains with the exception of domain Sexual Dysfunction (33).

The significant advantage of the valid and reliable PelFIs is its complete assessment of all PFD symptoms and QoL relating to these symptoms. Unfortunately, at this point, its advantage becomes its disadvantage, as the tedium of asking and recording responses to 149 items is substantial for both the participant and the administrator, with the respondent's discomfort further amplified by the sensitive nature of the questions. While the quality of being an administered tool is unique, it is restrictive and costly, and may be impractical for some research settings.

As with the previous devices, much of the data collected from this tool could only be classified as ordinal data; however, since some of the items have symmetrically-ordered choices, those question responses may be considered to be ranked as higher than ordinal-level data (127). The scoring of the PelFIs in this format is also cumbersome, however, future short-form versions of the PelFIs will no doubt address many of these concerns to offer a much more user-friendly questionnaire for use in research and clinical application (33).

Available Indices for Evaluating Pelvic Floor Health Knowledge

The concept of raising awareness and knowledge for the prevention or correction of PFD is a relatively new philosophy. As such, the existence of objective measuring devices for this application is scarce. An extensive literature review located two knowledge-evaluating indices, the Focused Knowledge Questionnaire (30) and the Prolapse and Incontinence Knowledge Questionnaire (PIKQ) (139).

Focused Knowledge Questionnaire

This 39-item survey consists of six domains and is based on the validated and 'tried and true' PFDI-20 and PFIQ-7 devices. Urinary symptoms were evaluated in 15 items, PFM exercise addressed in nine items, POP surveyed in six questions, and three items represented each of the categories of pelvic anatomy, physiology of POP and constipation. All questions were based on a true-or-false format with correct answers receiving one point and, incorrect answers and no-response to the item, scoring zero for that question. The marks were tallied with a possible scoring range of zero to 39, with the higher sum indicating a greater knowledge base related to pelvic floor health (30).

The advantages of this objective measurement tool are its ease of self-administration and scoring. The simplicity and straight-forward approach to assessing knowledge base for pelvic floor health is definitely a positive, as is the fact that it includes evaluation of conservative management approaches such as PFM exercise, bladder and bowel diet considerations, and treatment methods such as use of pessaries, in its content for critique.

A consideration for this tool is the application of only two choices in the response menu, true and false. While it was previously noted in the PFD symptoms and QoL evaluation devices that offering such a limited number of responses eliminates the measurement of strength of attitude and looks only at the directional dimension of this attitude (123), in this instance, we are not looking at the attitude or how strongly the participants feel that they know the correct answer to the question, but rather, it is simply assessing whether they are correct or incorrect. This is not a concern within the design integrity of the document since test-retest reliability, and concurrent and predictive

validity criteria have been successfully achieved in surveys offering as few as two categories (124). However, the fact that the survey does not account for the respondents guessing at the answer may be a concern, since there is a 50/50 chance of being correct when not necessarily knowing the material. As this tool is not yet in practical use, it is too soon to know if this will negatively impact its evaluation ability.

Other short-comings of this tool are that it does not address knowledge base for all pelvic floor health such as pelvic pain and sexual function but, more importantly, is the disadvantage that it has not yet been fully validated. To date, face and content validity have been achieved by the input and evaluation of experts. This promising tool is not available for use in research or clinical application as further rigorous testing is ongoing (30).

Prolapse and Incontinence Knowledge Questionnaire (PIKQ)

The PIKQ was designed to assess knowledge pertaining to urinary incontinence and POP and the scale is separated into two sections reflecting these areas, each consisting of a 12-item scale (see Appendix 3a. Prolapse and Incontinence Knowledge Quiz (PIKQ)-Incontinence, and Appendix 3b. Prolapse and Incontinence Knowledge Quiz (PIKQ)-POP). The PIKQ includes questions regarding the epidemiology, pathogenesis, diagnosis and treatment options for urinary incontinence and POP. Each item is followed by a menu option of "Agree", "Disagree" and "Don't Know". Each correct answer receives a score of one, while an incorrect answer and "Don't Know" response are treated equally and scored a zero, the highest possible score being 12 for the PIKQ-urinary incontinence scale and 12 for the PIKQ-POP scale (139).

The major advantage to this tool is that the PIKQ has been found valid and reliable to rigorous testing and, at this time, is the only tool of its kind that has met this standard. For both the urinary incontinence and POP scales, construct validity was determined since the average scores of the urogynecologic group exceeded those mean scores of the gynecologic patients ($p<0.001$). Cronbach's alpha exceeded 0.8 showing excellent internal consistency for both the urinary incontinence and POP scales. For the test-retest component, high reliability and stability was demonstrated for the urinary incontinence scale (Pearson's correlation=0.675) and POP scale (Pearson's correlation=0.940), with the average scores being slightly higher on the retest for both urinary incontinence (0.46; $p=0.46$) and POP (0.33; $p=0.126$) scales (139).

The PIKQ is acknowledged for its ease of self-administration and scoring. As with the Focused Knowledge Questionnaire, the inclusion of conservative management approaches such as PFM exercise, bladder and bowel diet considerations and treatment methods, such as the use of pessaries, are definite positives to this tool.

A potential advantage of the PIKQ versus the Focused Knowledge Questionnaire is the fact that it attempts to accommodate for guessing at the answer by offering the third response option of "Don't Know". In this way it is hypothesized that, if the respondents are unsure of their answers, they will not be forced into guessing but rather have the alternative to admit that this is not attained knowledge.

A consideration for the evaluation of this device is that the PIKQ is a fairly recent contribution to objective measuring tools and, as such, has not yet been extensively used in research and clinical application. While it appears to be a promising device, concerns may arise with future practical use. The disadvantage to the PIKQ, as with the Focused

Knowledge Questionnaire, is the limitation of evaluated areas of pelvic floor health. Also, since there are no items related to sexual function or pelvic pain, it is not all-encompassing to the assessment of pelvic floor health knowledge.

Measuring Tool Selection

When selecting a measuring tool, it is important to identify the survey best suited to the research, or clinical requirements. To properly determine its suitability consideration for all aspects of the tool's design is needed.

Outcome Measured

All questionnaires are validated for a predetermined purpose and a specific population. If a tool is adjusted to meet a differing context or population, validation comes into question and further testing would be required (140,141). It is critical to confirm that the survey selected for use measures the outcome needing to be evaluated and, whenever possible, the tool chosen was originally designed for the population now being studied. Conclusions cannot be extrapolated from the initial intent of a measuring device.

Validity, Reliability and Responsiveness

It is critical that a questionnaire has been shown valid, reliable and responsive before being implemented into practice. For the tool to be considered valid, it must be shown to actually measure what it claims to measure, whereas reliability refers to the

stability and consistency of the tool. The responsiveness of an objective measuring device refers to its ability and sensitivity to detect clinical change over time.

If the outcome measurement tool has not previously been scrutinized via rigorous testing, and shown valid for research studies and clinical application, then there is a high risk that its use may lead to inaccurate conclusions. A null hypothesis may be inappropriately rejected and replaced with a new theory when it was, in fact, not effectively disproven, or the null hypothesis may not be replaced when it rightfully should have been, however, the device failed to detect significant clinical impact. Simply the possibility that error may have taken place by the application of an untested and unproven tool causes the results to become suspect and, therefore, conclusions drawn from it are essentially worthless when the opportunity for an alternative explanation exists (126). It is always advisable to select a validated survey that has been previously used on the same population being studied when possible. Furthermore, altering an objective measuring tool in any way, such as removing segments or changing the order of the items, may compromise the integrity of the index and its predetermined validity (140,141).

Length and Format

The selected tool must be of sufficient length and design format for use in clinical or research application. For example, a 100-item questionnaire may not be appropriate from a logistics perspective for a sample size of 1000 participants, as the time necessary to execute the device and evaluate the data may preclude practicality. Conversely, a two-item questionnaire may not access all variables needing to be measured and, therefore, would not be appropriate for use in that circumstance. As well, whether or not the

questionnaire requires administration may be a critical consideration. For example, in a clinical environment the practitioner may prefer to record the responses, however, in a mailed or online survey only independently completed tools are suitable. It has been shown that administered questionnaires enhance the rate of response to items, although, when issues being studied are sensitive in nature, as with PFD, the self-administered design format improved participants' willingness to disclose private details (142).

With regard to the construct design of the outcome measurement instrument, the greater its condition-specificity the more in-depth the assessment of the critical PFD issues. The advantage is that the tool will be much more responsive to change, compared to generic devices. The disadvantage is that the data collected from these instruments cannot be extrapolated to the general population, since the goal of design was to be condition-specific (141).

Paper versus Online Application

With today's technological resources, the ease of offering objective measurement surveys online is a tempting solution to reach large populations. However, while practical, it is not appropriate for all applications as each research study has differing goals and aims. Concern surrounding sensitive material is a significant consideration when using Internet venues.

While it was noted earlier that response rates improve when tools are administered to the participant by the researcher, the willingness to reveal details of a sensitive nature, as is the case for pelvic floor health, decreases when completed in a face-to-face scenario (142). This is supportive of using electronic versions of objective measuring devices, such as the e-PAQ for the study of pelvic floor health, as respondents

are able to complete the survey wherever they feel comfortable, perhaps within the privacy of their own homes. However, Boynton's study in 2004 found that when completing an online survey questioning sexual function the older participants in the study were not willing to disclose this information. Interestingly, this uneasiness was not due to the sensitive nature of the questions but, rather, the fact that the participants were not comfortable with the electronic version of administering the items (143).

Overall, the use of Internet surveys can be a beneficial resource medium for the transmission of outcome measurement tools but it must be confirmed that participants are comfortable with the use of the computer and software program being used, as well as reassurance given to how the data collected will be stored and who will have access to the private information gathered.

The Outcome Measure of Indices Reviewed

Since each tool was designed with a specific goal for evaluation, this must be considered when selecting the most appropriate device and, also, to later determine if an intervention has had a significant effect (see Table 13a. PFD Symptom & QoL Questionnaires). The PISQ and its short version, the PISQ-12, are the only questionnaires that are condition-specific to the sexual function of women experiencing urinary incontinence and/or POP and, therefore, their use reveals the change, if any, in sexual function and QoL factors for this population (117,122). The KHQ and its short form, the KHQ-7, evaluate the feelings toward symptoms of urinary incontinence and QoL related to this bladder dysfunction (118). The results of this evaluation tool allow us to determine

if an alteration in QoL or feelings toward urologic symptoms have occurred following an intervention. The remaining five PFD-symptom assessment tools all measure the presence of PFD symptoms and QoL factors related to these symptoms and, therefore, allow us to determine if a significant change occurred in these variables (bladder and bowel dysfunction, POP, pelvic and sexual pain) following the intervention. The only differences being that the PFDI/PFIQ (31) (and its short versions PFDI-20/PFIQ-7 (136)), the ePAQ-PF (120), and the PelFIs (1,33), measure all PFD aspects, while the P-QOL calculates these same PFD outcomes but only for the specific population of women experiencing POP (119).

With regard to the pelvic floor health knowledge questionnaires, the Focused Knowledge Questionnaire and the PIKQ (urinary incontinence and POP scales), the variable that both measure is knowledge related to PFM exercise, bladder and bowel-friendly diets, bladder irritants, bladder function, voiding frequency, bladder urgency, risk factors associated with urinary incontinence and POP, POP symptoms, the use of pessaries, and other available treatment options (30,139). The data collected from these devices, pre- and post-intervention, will allow us to determine if any significant change in knowledge has occurred following the introduction of the independent variable, in this case, education (see Table 13b. Knowledge-Acquisition Questionnaires).

Selection of Tools for this Research Study

To evaluate the effect of an intervention, validated and reliable objective measuring devices must be used. More than a handful of tools such as these have been

used to quantify the different symptoms of PFD; however, few instruments exist that measure the knowledge and awareness surrounding pelvic floor health and PFD. While each survey is designed with a different goal in mind, it is important to appreciate the advantages and disadvantages of each to best match the measuring device to the specific clinical application or research study and, therefore, previous identification of the variables needing to be measured by each instrument must occur. This is also critical for analyzing the data once collected, so that it may be determined if the intervention identified significant change of this outcome variable.

Measurement tools for PFD symptom-quantification have the luxury of standing the test of time, thereby, allowing validation in varying languages, with differing goals. For the purposes of this research study, the PFDI-20 and PFIQ-7 are the most appropriate tools as they are the most PFD symptom-encompassing tools available that have been shown valid for online use and offered in user-friendly short form versions. The PFDI and PFIQ instruments have withstood rigorous validity and reliability testing, as well as the test of time through hands-on research implementation. While items are limited in the PFD domains of sexual function and pelvic pain, the content of these objective measuring devices meet the demands of the proposed research study.

Knowledge-acquisition questionnaires specific to pelvic floor health are recent contributions and currently offer only a single validated index in the English language. It is apparent that the continued enhancement and development of such objective measuring tools is crucial to furthering global PFD research and clinical application in the field of pelvic floor health. As there is no choice in selection of tools available to measure pelvic

floor health knowledge, the sole validated tool, the PIKQ, was used and sufficiently meets the expectations of the proposed research study.

PURPOSE, OBJECTIVES AND HYPOTHESIS

Purpose

The purpose of this study was to accurately, and precisely, evaluate the pelvic floor health knowledge base in women working in an office environment and whether or not this knowledge base significantly increased following a pelvic floor health education session. Furthermore, the research study evaluated whether there was any need or benefit to the subsequent pelvic floor health re-education component, approximately two months (seven to nine weeks depending on presentation dates attended) following the initial education workshop.

This study further identified and objectively measured the presence of PFD symptoms within this female population. The PFD symptoms noted within the volunteer participants were then re-evaluated following the pelvic floor education session to determine if raising knowledge and healthy pelvic floor habits toward this topic positively impacted their overall pelvic floor health by decreasing their PFD symptoms.

Objectives

1. To evaluate the effects of education and increasing awareness on pelvic floor health and PFM function.
2. To evaluate the effects of reinforcing education.
3. To determine the prevalence of PFD, and the awareness of the presence of these signs and symptoms, within the general female population.

Hypothesis

1. There will be a significant increase in knowledge base of pelvic floor health following the education session.
2. There will be a significant benefit to reinforcing education.
3. There will be a high prevalence of PFD combined with low levels of awareness to these PFD symptoms, identified within the female population studied.
4. By increasing pelvic floor health awareness and improving PFM function and habits, awareness to the presence of the PFD symptoms will be significantly increased, and PFD symptoms will be significantly decreased.

METHODOLOGY

The following sections present a synopsis of the experimental design, followed by detailed descriptions regarding the participants, the implementation of the study, the research evaluation tools and other aspects of the methodology.

Synopsis of the Experimental Design and Data Analysis

This study was designed as a completely randomized design with three groups (A, B and C) and three repeated measures (Time 1, Time 2 and Time 3). Education sessions took place immediately before Time 2 and again just prior to Time 3. The first education intervention was given to Groups A and B (but not Group C as they remained the control group of the study), and the second intervention, the re-education session, was offered to participants of Group A only.

- Group A (n=48) attended both education sessions.
- Group B (n=48) attended the first education session only.
- Group C (n=49), the control group did not attend any of the education sessions.

- Time 1 data was collected at the time of the initial screening (baseline data).
- Time 2 data was collected after the first education session.
- Time 3 data was collected after the second education session.

Group A	Baseline Survey	Education	Time 2 Survey	Re-Education	Time 3 Survey
Group B	Baseline Survey	Education	Time 2 Survey		Time 3 Survey
Group C	Baseline Survey		Time 2 Survey		Time 3 Survey

At each of Time 1, Time 2 and Time 3, all participants completed an online questionnaire pertaining to pelvic floor health. Data collected from these questionnaires may be classified into three categories:

A. Independent Variables: 15 demographic variables.
B. Dependent Variables: Answers to survey questions on pelvic floor health knowledge, PFD symptoms, QoL related to PFD and PFM exercise.
C. Pelvic Floor Health Indices: 35 indices were designed to measure various aspects of PFD. These variables are calculated from the dependent variables.

The three data categories were utilized as follows:

A. The Independent Variables were used to ascertain the homogeneity of the groups using 2-way Chi Square analysis.
B. The Dependent Variables were analyzed using non-parametric methods. They were also used to calculate the indices.
C. The indices derived from the Dependent Variables were analyzed by the Analysis of Variance (ANOVA) according to the following allocation of the Degrees of Freedom (DF):

Source of Variation	**DF**
Between Groups	2
Error 1 (between Subjects within Groups)	142
Total 1 (between Subjects)	144
Between Times	2
Interaction (Groups x Times)	4
Error 2 (Times x between Participants within Groups)	284
Total Variation	434

- The mean squares of Groups were tested against Error 1.
- The mean squares for Times and for the Interaction were tested against Error 2.
- Means were compared using Tukey tests.
- Main conclusions were drawn from the results of the interaction (Group x Times).

Details and exceptions of the above synopsis are shown in the following sections.

Participants

Females working at, or associated with, Manitoba Hydro, were approached, informed of the research study and asked if they would volunteer to participate. Manitoba Hydro offers a “Brown Bag” information forum to employees over their lunch hour. During these sessions, at both the 360 Portage Avenue and the 820 Taylor Avenue

locations, this research study was announced to recruit volunteers. Additionally, volunteers were recruited by various means such as advertising posters (see Appendix 4. Participant Recruitment Advertisement), internal e-mail notices, and word of mouth throughout the corporation. Those interested in volunteering were asked to submit their e-mail addresses for future contact.

Inclusion/Exclusion Criteria

Any adult female (18 years of age or older) working at, or associated with, Manitoba Hydro and able to independently complete the online surveys, was eligible to participate. Participants would have been excluded if they were not fluent in the English language or failed to respond to contact attempts via the e-mail address supplied during the recruitment stage. While no exclusions occurred due to language barriers, exclusions were necessary when participants failed to respond to e-mail contacts.

Sample Size

The calculations for optimal sample size were performed in consultation with a biostatistician at the University of Manitoba. As the population studied was comprised of presumably healthy female individuals, as opposed to females suffering with PFD and seeking medical attention and would, therefore, potentially be more highly motivated when knowingly symptomatic, it was determined that a small to moderate effect was an appropriate expectation. It was determined that should the observed effect size be small to moderate (0.15), a total sample of 117 would be required to ensure a 90% power when tested at the 5% level of significance. Under these conditions, calculations verified that a small to moderate effect would be noted with a total sample size of 141 females (a

minimum of 47 participants per group), ensuring a power of 95%. Calculations were carried out using both the G*Power 3.1 (http://www.psycho.uni-duesseldorf.de/abteilungen/aap/gpower3/) and the effect size definitions developed by Cohen (144, 145).

Contact, Consent and Confidentiality

The following sections describe how contact was made with the volunteers, how informed consent was attained and how confidentiality was maintained throughout the research study.

E-mail Participation Invitations

All participants were asked to complete a Survey Monkey™ (www.surveymonkey.com) online questionnaire on three separate occasions. Links to the questionnaires and access codes were e-mailed to each participant (see Appendix 5. E-mail Survey Participation Invitations).

Informed Consent Documentation

All participants were asked for their consent to participate in the research study at the time of recruitment. The official University of Manitoba Informed Consent Documentation (see Appendix 6. Official Participant Consent Form) was attached to the initial e-mail used to supply the Survey Monkey™ link and access code to each participant. Furthermore, participants were notified at the beginning of the initial survey that, by completing the online questionnaire, they would be granting their informed

consent (see Appendix 7. Survey Monkey Online Survey 1 of 3). Contact information was provided so that participants having any questions or concerns would be able to communicate directly with a member of the research team.

Confidentiality

All information collected from the participants was kept strictly confidential and available only to the research staff. Media containing sensitive information was stored in a locked filing cabinet, or stored on a password-protected computer. Data was reported in aggregate form and the names of the participants appear only on the Confidential Participant Coding Forms and not on the online surveys. All paper documentation was stored in a locked cabinet. The online questionnaires were completely anonymous and could be identified only by the tracking numbers.

SurveyMonkey.com complies with the EU Safe Harbor framework as set forth by the Department of Commerce regarding the collection, use, and retention of data from the European Union. They automatically collected Internet protocol addresses, browser type, Internet service provider, referring/exit pages, operating system, date/time stamp, and clickstream data. All data was used in aggregate form with no specific users tracked.

Protocol Collection and Storage of Documentation

The online questionnaires collected will be retained for seven years and stored as outlined above. This information will be destroyed after the seven-year period. All paper documentation of questionnaires and participants' confidential e-mail lists will be shredded and information contained on computer will be deleted in full. Any backup disks or memory media of any kind will be physically destroyed.

Study Implementation

The research study commenced with randomly assigning the 161 volunteers to groups A, B or C using a computer-generated random numbers table. The group placement of the participants was recorded on the Confidential Participant Code Form.

Notification of Study Group Allocation & Requirements

At the commencement of the study participants were notified as to which group they had been assigned and were invited to complete the first survey. The participants were also informed of the commitment involved for their specific group, i.e. for completion of their volunteerism in the research study, all participants would be required to complete three online surveys ranging from two to 10 minutes in length and spread over a two-month period. Additionally, participants assigned to groups A and B would be asked to attend an education presentation over their lunch break, and participants of Group A only, would be asked to attend a follow-up education session approximately two months later. Participants were further advised of the dates and locations of the education sessions and asked to schedule them into their agendas.

Implementation of the Research Study

The following sections detail each step of the study through all three times and two education interventions.

Survey 1

At the commencement of the first of three online surveys, a total of 10 participants withdrew from the study. Upon reviewing the survey, four of the 10 women noted that they were not comfortable completing the survey items due to the sensitive nature of the topic and preferred to terminate their participation. Two volunteers resided in rural Manitoba as they held postings at Manitoba Hydro stations located outside of Winnipeg and would, therefore, be unavailable to attend the education sessions. The remaining four participants who were unwilling or unable to fulfil their commitment did not disclose their reasons.

The first online survey was officially closed before the education intervention began. At this time, Survey 1 had been received from a total of 151 participants; comprised of 50 from Group A, 49 from Group B and 52 from Group C.

Initial Education Intervention

Manitoba Hydro has two separate locations within the city of Winnipeg. In order to accommodate the participants of Group A and Group B, the initial education session was scheduled on two consecutive days at the 820 Taylor Avenue location and the 360 Portage Avenue location, respectively. While attendance was good, as monitored by the sign-in sheets used at both venues, several participants were unable to attend due to illness or unexpected scheduling conflicts. Within days, three additional education sessions were given in the two locations, in order to accommodate those who expressed regret upon missing the presentation. Over a seven-day period, a total of five repetitions of the initial education session were completed.

Survey 2

Following the education sessions, the second online survey invitations were e-mailed to all participants. At the closing of the second survey, two weeks following the initial education intervention, a total of 149 surveys were received (50 from Group A, 49 from Group B, and 50 from Group C). Two participants from the control group did not respond to the e-mail invitation to complete the second online survey and were, therefore, excluded from the study.

Second Education Intervention

Approximately two months (7.5 weeks) after the commencement of the original education sessions, a second round of presentations was conducted as per the design of the study. This presentation was repeated four times over 10 days.

Survey 3

Within 24-hours of the re-education session, the third and final online survey invitations were e-mailed to all participants. The closure of the final survey took place 15 days following the completion of the second education session. At the completion of the Time 3 survey, 147 participants had completed Survey 3 and concluded their commitment to the research study. The 147 responses were comprised of 49, 48 and 50 from groups A, B and C, respectively.

Even with the necessary exclusion of one member from Group A, who was unable to attend the second education session, plus the automatic elimination of one member of

Group B due to lack of response to the survey invitation, the 147 completed surveys exceeded the 141 minimum sample size required. Additionally, the individual group threshold of a minimum of 47 participants per group was surpassed.

Online Surveys Detailed

Each of the three online surveys included previously validated research tools measuring the participants' knowledge related to pelvic floor health. The presence of PFD symptoms and QoL relating to PFD were also measured using previously validated research tools.

Validated Tools

- **Pelvic Floor Health Knowledge Measurement Tool**

For evaluation of pelvic floor health related knowledge, the Prolapse Incontinence Knowledge Quiz (PIKQ) was selected as it is currently the only tool of its kind that has successfully completed validity and reliability testing (139) (see Appendix 7. Survey Monkey Online Survey 1 of 3).

- **PFD Symptom Measurement Tool**

To evaluate the presence of PFD symptoms the Pelvic Floor Distress Inventory-Short Form-20 (PFDI-20) was used (31). This objective measuring tool is long-standing and a thoroughly proven tool for this means. That noted, while it measures PFD symptoms related to POP, bladder and bowel dysfunction, it is limited in its identification of pelvic pain and includes no items specific to sexual function. To address this, two non-

validated items were added to the tool. These items were included to evaluate the pelvic pain and sexual dysfunction domains of PFD. The tool was then referred to as the PFDI-20(+2) within this research study, with the understanding that only the PFDI-20 tool had been previously validated (see Appendix 7. Survey Monkey Online Survey 1 of 3).

- **PFD-Related QoL Measurement Tool**

To evaluate the QoL related to pelvic floor health the Pelvic Floor Impact Questionnaire-Short Form-7 (PFIQ-7) was used (31). This is a long-standing and thoroughly proven tool for this means (see Appendix 7. Survey Monkey Online Survey 1 of 3).

Non-Validated Tools

There were non-validated items included on the surveys to address demographic variables, awareness of PFD symptoms, attitudes toward PFM exercise and to track those participants who sought information on pelvic floor health outside of the study. These questions were not part of a validated tool; however, they proved useful in comparing the homogeneity of the study groups, as well as in determining if the education led to a change in commitment-level toward the importance of, and completion of, pelvic floor strengthening exercises and if increasing pelvic floor health knowledge brought the presence of previously undiagnosed PFD symptoms to the attention of the volunteers.

- **Measurement of Demographic Variables**

The first of the three online surveys also included 15 items determining the demographics of the study participants. These questions focused on age, education level,

marital status, economic status, race/ethnicity, overall health and obstetric and gynaecologic experiences (see Appendix 7. Survey Monkey Online Survey 1 of 3).

- **Measurement of Participants' Recognition of PFD Symptoms**

An item included on all three online surveys asked participants if they had PFD. The intent of its inclusion was to evaluate participants' awareness to the presence of PFD symptoms (see Appendix 7. Survey Monkey Online Survey 1 of 3).

- **Measurement of Participants' Attitudes Toward PFM Exercise**

There were three non-validated items included on each of the three online surveys pertaining to the participants' feelings towards the importance of PFM exercise, whether they felt they knew how to complete a PFM contraction correctly, and if they routinely participated in PFM exercise (see Appendix 7. Survey Monkey Online Survey 1 of 3).

- **Measurement of Participants' Information Seeking Behaviours**

An additional item was included on the second and third surveys. This item asked participants if they had sought out any additional information regarding pelvic floor health, independent from the study. This question was important to note if any participants from Group C, the control group, had independently researched this topic after completing the pelvic floor health questions on Survey 1, as this could potentially alter their pelvic floor health knowledge levels for the second survey.

This item was included on Survey 3 to again note whether or not the control group participants sought information following the second survey, thereby potentially affecting their pelvic floor health knowledge responses on the third survey.

Composition of the Three Online Surveys

The following summarizes the composition of each of the three online surveys:

Survey 1:	Survey 2:	Survey 3:
15 demographic items		
1 item re: PFD Awareness	1 item re: PFD Awareness	1 item re: PFD Awareness
3 items re: PFM Exercise	3 items re: PFM Exercise	3 items re: PFM Exercise
	1 item re: sought information	1 item: re: sought information
PIKQ (pelvic health knowledge)	PIKQ (pelvic health knowledge)	PIKQ (pelvic health knowledge)
PFDI-20(+2) (PFD symptoms)		PFDI-20(+2) (PFD symptoms)
PFIQ-7 (PFD-related QoL)		PFIQ-7 (PFD-related QoL)

The necessary time to complete the online surveys ranged between two to 10 minutes. The baseline survey (Time 1) required the longest amount of time to complete as this questionnaire included the 15 demographic items. These items were not included on the second or third surveys.

The Time 2 survey was the shortest of the three surveys since it did not include the PFD symptom items from the PFDI-20(+2) and the PFIQ-7. As it took place immediately following the initial education workshop, PFM exercises and healthy pelvic floor habits would not have been implemented within the participants' day to day lives and, therefore, PFD symptoms and QoL would not have had the opportunity to be altered.

The Time 2 and Time 3 surveys contained two additional items not incorporated into the initial survey. These two items included the question regarding the seeking of pelvic floor health information independent from the study, as previously noted, plus one item used to verify the attendance of participants of Groups A and B at the education

presentation. Responses to this item allowed Group A and B volunteers' presence at the education intervention to be cross-checked to the sign-in sheets offered as participants entered the presentation sessions.

The third and final survey (Time 3) included the presentation attendance verification item, the five non-validated items; one related to PFD awareness, three related to PFM exercise and one regarding pelvic floor health seeking behaviour, the PIKQ (incontinence and POP) items to assess pelvic floor health knowledge-acquisition, and the PFDI-20(+2) and PFIQ-7 items, to evaluate the presence of PFD symptoms and QoL related to PFD.

Education Intervention Detailed

Groups A and B received a 60-minute educational presentation on pelvic floor health and PFM function, including instruction in a simple PFM home strengthening program and healthy toileting habits, followed by a brief question and answer period. The education session included information on the definition of PFD, the types of and risk factors associated with PFD, plus the medical interventions available for treatment of PFD. Also presented were the functions of the PFM and its impact on PFD when the PFM has been neglected or injured, or is unhealthy for whatever reason. Many healthy behavioural strategies such as proper toileting postures and habits, bladder and bowel-friendly diet information, and the previously mentioned, basic PFM home exercise protocol were presented.

Groups A and B received this presentation simultaneously in order to decrease concerns with variations in content. To achieve this, both groups were notified of the two dates of the presentations and were invited to attend the presentation best suited to their

individual schedules, thereby having representatives from both groups mixed at each session. Group C, the control group, did not receive this education presentation.

Re-education Intervention Detailed

In order to allow time for exercise and behavioural strategies to have their effect, approximately two months following the first education session Group A was asked to return for a second presentation. This was to evaluate the effect of a 'reminder' or 're-education' session. This presentation was again approximately 60-minutes in length and reviewed the information previously presented at Time 2.

Study Design

The research study was a completely randomized design with two experimental groups (Groups A and B) and a control group (Group C), with three repeated measures (Time 1, Time 2 and Time 3) for each participant. The GROUP and the TIME are factors of a two-factor factorial design with three levels each. However, since the participants were allocated randomly to the groups and then the three repeated measures were taken on each participant, a 'mixed analysis of variance' that provides for two experimental errors, was applied (146).

Collection of Data

The data was received as three hyper-links to Survey Monkey. Each link was used to download the results of a survey (Time 1, Time 2 and Time 3) into an Excel file. Each of the three data files contained the responses of all 151 participants. All responses were

in text form as they appeared in the questionnaires. In order to collect and code the responses, a new file entitled 'DATA' was created. The three imported files were initially loaded onto three separate sheets and assigned a colour to identify its survey number. The three sheets were then combined into one Master Data Sheet and sorted by GROUP, SUBJECT NUMBER and TIME, thus the three surveys of each participant were located in consecutive rows. In this way incomplete surveys were easily identified.

Coding the Data

Once the surveys were organized within the Master Data Sheet, the text responses were coded into numeric codes and values. Table 14. Variable Coding, lists all 87 variables that were collected, their coding methods used and other pertinent information.

Coding for the Demographic Information

The 15 demographic variables D01 through D11 provided basic demographic information about the participants. This information was used to describe the participants as a whole and to test the homogeneity of the three groups. This section was included only in the first of the three online surveys (see Appendix 7. Survey Monkey Online Survey 1 of 3).

In coding variables D1 through D9, and D11, the category name was replaced by the category number. For the question D5, "What is your race/ethnicity?" the choices on the questionnaire were: 'Caucasian (not including Hispanic)', 'Hispanic', 'African American',' Asian' and 'Other (please specify)'. Upon reviewing the data for coding, it was noted that a few of the participants who selected 'Other' had specified 'White'. These were coded 1-Caucasian. There were two additional ethnicities listed within the

'Other' category: Aboriginal and East Indian. These were assigned the codes 5, and 6 respectively. The selection 'other' was therefore deleted. This in no way affected the integrity of the data collected, but rather served to simplify the analysis.

Variables D10.1 through D10.5 (birthing interventions), in addition to be used as individual variables with a yes/no selection (with yes coded as '1' and no coded as '0'), were combined into an index showing the total number of interventions (epidural, episiotomy, perineal tear, vacuum and forceps extraction) for each participant. This is described further in the section 'Pelvic Floor Health Study Indices'.

Coding for Pelvic Floor Health Knowledge Information (PIKQ Data)

For both 12-item PIKQ domains (PIKQ-Incontinence and PIKQ-POP) of the online surveys administered at Time 1, Time 2 and Time 3, the participants were asked to choose their response from a menu selection of "Agree", "Disagree", and "Don't Know". Each correct response received a score of one, whereas each incorrect response received a score of zero (the correct answers to each statement have been bolded in Appendix 3a. Prolapse and Incontinence Knowledge Quiz (PIKQ)–Incontinence (139), and Appendix 3b. Prolapse and Incontinence Knowledge Quiz (PIKQ)–POP (139)). Responses of "Don't Know" were treated equally as incorrect answers and, therefore, scored at zero. The scores of each PIKQ have been summed with higher totals indicating a greater knowledge on the topic.

Coding for PFD Symptom Information (PFDI-20 and PFDI-20(+2) Data)

The possible responses for the 20-item PFDI plus the addition of two items related to Domain Pelvic Pain and Domain Sexual Dysfunction, ranged from "no symptom present" to "symptom present and quite a bit of a bother". The numerical scores were displayed next to their corresponding text definition to reflect the calibration of the response selections. When asked if participants experienced the PFD symptom, if they responded 'No (0)', they moved on to the next question and received a score of zero. However, if they selected 'Yes', they were prompted to complete the second step of the item, which asked, "How much does this bother you?". Their selection of responses included 'Not at all (1)', 'Somewhat (2)', 'Moderately (3)', and 'Quite a bit (4)' and participants received the score that corresponded to the descriptive word that progressed in numerical value with increased bother of the symptom (see Appendix 7. Survey Monkey Online Survey 1 of 3).

Coding for PFD-Related QoL Information (PFIQ-7 Data)

For the PFD QoL items collected on the PFIQ-7, seven statements reflecting standard activities of daily living, such as household chores including cooking, housecleaning and laundry, or, physical activities such as walking, swimming or other exercise, were listed. Participants were asked if their 'Bladder or Urine', 'Bowel or Rectum', or 'Vagina or Pelvis' were affected during any of these activities and, if so, to what degree. Each item was coded on a scale of zero to three with zero reflecting 'Not at all ', one equalled 'Somewhat', two for 'Moderately' and three denoted 'Quite a bit' of a bother.

Coding for 5 Non-Validated PFD & PFM Exercise Items

The first online survey included four non-validated items. The first item asked if participants recognized the presence of PFD symptoms in themselves. If they said 'yes', they scored one point, and if they selected 'no' or 'I don't know', they scored a zero.

The second item asked participants about their knowledge related to PFM exercises. If they felt that they knew what PFM exercises, or 'Kegels' were, then they would select 'Yes' and receive one point. If they replied 'No' they received zero points and selecting 'I think so' received half a point.

The third non-validated item asked participants about their commitment toward PFM exercise. If participants 'Regularly' completed PFM exercises, their commitment level was scored four points. For those that 'Often' exercised their PFM, they received three points. 'Sometimes', 'Rarely' and 'Never' received scores of two, one and zero, respectively.

The fourth non-validated item asked participants whether they felt that PFM exercise was important for their health. A score of four was given for 'Very important' responses, while three, two and zero were scores for responses of 'Moderately important', 'Somewhat important' and 'Not important', respectively. A score of one was given if participants stated that they had 'Never thought about it'.

The final non-validated item was included on the second and final surveys and was created to identify the data of those participants, particularly in Group C, that noted they had sought pelvic floor health information since the previous online survey. For the

coding of this item, the response 'Yes' was scored one point and 'No' was given zero points.

Pelvic Floor Health Study Indices

In order to generate continuous variables measuring the various aspects of PFD and related matters, 35 standardized indices were created and used. These were termed the Berzuk Indices of Pelvic Floor Dysfunction (BIOPFD) and are shown in Table 15. Berzuk Indices of Pelvic Floor Dysfunction (BIOPFD).

Each index is the average or the total of specific component variables. They are standardized so that each index has a minimum of zero and a maximum of 100. Some indices have been derived directly from the measured variables. Others were derived from other indices. These have been weighted with each included variable having equal weight.

All 35 BIOPFD were calculated for each participant, for each of the times they were collected (Time 1 for birthing intervention data, Time 1 and Time 3 for PFD symptom and PFD-related quality of life data, Time 2 and Time 3 for seeking information data, and Times 1, 2 and 3 for pelvic floor knowledge data, PFD awareness data and PFM exercise data), in a Master Data Excel spreadsheet. The calculation equations for each index were also shown at the top of each column for verification purposes. Following is a brief description of these indices.

Index for Total Birthing Interventions

The Index INTERV measures the total number of birthing interventions experienced by each participant. This allowed testing for homogeneity of the three

groups. Birthing interventions have been shown to increase the risk of subsequent PFD (22,116). A woman experiencing multiple interventions, i.e. epidural, forceps extraction, vacuum extraction, perineal tear and episiotomy in their birthing history, may impact the group by virtue of the combination of these factors.

Indices for Pelvic Floor Health Knowledge Information (PIKQ Data)

Three indices, PFK, KUI and KPOP, were derived from the responses to the two components of the PIKQ; PIKQ-Incontinence and PIKQ-POP. The Index KUI measured the total knowledge related to incontinence (PIKQ-Incontinence). The Index KPOP measured the total knowledge related to POP (PIKQ-POP). The Index PFK summed the two to determine total pelvic floor health knowledge (PIKQ).

Indices for PFD Symptom Information (PFDI-20 & PFDI-20(+2) Data)

A total of 21 of indices were derived from the PFD symptom data collected from the PFDI-20(+2). Variations of the 22 items were evaluated by their corresponding formula, to calculate different indices. For example, when only the initial 20 items from the previously validated PFDI-20 were analyzed, the weighting system described by the creators of the PFDI-20 was followed, giving equal weight to each of the three domains. However, with the addition of the two sexual function items a separate weighting system was necessary and equal weight was given to each of the 22 items.

- **PFDI-20**

The original PFD symptom items were analyzed in a total of four indices. All 20 items were analyzed within the Index PFDI. Each of the three PFD domains recognized on the PFDI-20 was individually indexed to determine the UDI, CRADI and POPDI, with calculation of the results following the format described by the creators of this tool.

UDI (Urinary Distress Inventory) uses the mean of items 15 through 20 before multiplying by 25. CRADI (Colo-rectal-anal Distress Inventory) averages items seven through 14 and multiplies by 25. POPDI (Pelvic Organ Prolapse Distress Inventory) was calculated by averaging the first six items on the survey and multiplying by 25 as the response scores range from zero to four.

Finally, the Index PFDI was created to analyze the complete PFDI-20 tool (items 1-20), with the three domains summed and the average determined. Because the three domains encompass varying number of items (POPDI=six items, CRADI=eight items and UDI=six items), each scale is given equal weight, or importance, but each item would not be weighted equally. This traditional format was used during the data analysis and referred to as Index PFDI.

- **PFDI-20 Weighted**

For this study, the PFDI-20 data was further analyzed using a method giving equal importance to each of the 20 items within the composite PFDI-20 score, i.e. items 1 through 20 weighted equally. This demonstrates that differing results are determined depending on implementation of equally weighting the domains, Method 1 (traditionally used for the PFDI-20 tool), versus equally weighting each item, Method 2, providing

domains include unequal numbers of items as in the PFDI-20. For the consideration of PFDI-20 data, it is imperative to follow the traditional Method 1 format since this was used in determining validity of the tool in previous studies. However, by adding two items to the PFDI-20 to create the PFDI-20(+2), Method 2 was followed and, thereby each of the 22 items would be deemed equally important (see Table 16. Averaging PFDI-20 Items: Method 1 versus Method 2).

To transition between the analysis of PFDI-20 requiring Method 1 and PFDI-20(+2) following Method 2, a single index, PFDI-20W, was created. In this way the PFDI-20 data was anaylzed following both methods and the results of each could be compared.

- **PFDI-20(+2)**

In total, 16 indices were created to analyze the data collected from the 22 items on PFDI-20(+2). The Index PFDI-20(+2) represented equal weight given to each of the 22 items with each of this tool's five PFD domains analyzed in indices BladDysf, BowlDysf, POP, Pelvic Pain and SEXUAL. As the domains representing bladder and bowel dysfunction encompass numerous sub-categories and, in fact even sub-sub-categories, an additional 10 indices were created; ObstBlad, UrnFreq, UI, SUI, UUI, ObstBowl, BowlUrge, BowlIncnt, FI and flatual (see Figure 5. PFD Symptoms Measured by PFDI-20(+2) Items).

BladDysf was used to analyze the complete Domain Bladder Dysfunction. To delve further into the divisions of bladder symptoms within the domain, indices ObstBlad, UrnFreq and UI were created. These indices evaluated symptoms related to

obstructive bladder, urinary frequency and urinary incontinence, respectively. Index UI was further subdivided to analyze two types of urinary incontinence; Index SUI was used for stress urinary incontinence and Index UUI for urgency urinary incontinence.

BowlDysf was used to analyze the complete Domain Bowel Dysfunction. To further investigate differing bowel symptoms within the domain, ObstBowl was used to evaluate obstructive bowel, BowlUrge analyzed bowel urgency and BowlInct assessed symptoms of bowel incontinence. The Index BowlInct, like Index UI, was further sub-divided to address two forms of bowel incontinence; Index FI addressed fecal incontinence and flatual represented flatual incontinence.

POP was the index used to analyze the Domain POP, Index Pelvic Pain analyzed Domain Pelvic Pain, and Index SEXUAL analyzed Domain Sexual Dysfunction.

Indices for PFD-Related QoL Information (PFIQ-7 Data)

With regard to the PFD-related QoL items, seven statements reflected standard activities of daily living and participants were asked if their bladder, bowel or vagina interfered with these behaviours. From the total 21 (7 x 3) scores, the Index PFIQ was determined, plus the three individual domains created indices UIQ, CRAIQ and POPIQ for the calculation of the bladder, bowel and vagina/POP items, respectively.

UIQ was calculated as the average of the seven bladder questions (Blad1–Blad7). It measures the Urinary Impact Questionnaire (PFIQ-7) determining the bladder's effect on daily life.

CRAIQ was calculated as the average of the seven bowel questions (BOWL1–BOWL7). It measures the Colo-rectal-anal Impact Questionnaire (PFIQ-7) determining the bowel's effect on daily life.

POPIQ was calculated as the average of the seven Pelvic Organ Prolapse questions (PELV1–PELV7). It measures the Pelvic Organ Prolapse Impact Questionnaire (PFQI-7) determining the effect of POP on daily life.

PFIQ was calculated as the average of the above three indices. It measures the total impact of the PFIQ-7 (Bladder, Bowel and Vagina/POP) on daily life.

Indices for the 5 Non-Validated PFD & PFM Exercise Items

The final indices used the data established from the five non-validated questions included in the online surveys. Using this data, six indices were calculated; HavePFD, PFMexK, PFMex, PFMimp, PFMtot and PFinfo.

Item 1 asked if participants recognized the presence of PFD symptoms in themselves. These responses were used for the Index ‘HavePFD’.

The second item asked participants about their knowledge related to PFM exercises. This index was labelled ‘PFMexK’ and represented the knowledge related to PFM exercises.

The third item asked participants about their commitment toward PFM exercise and was used to develop the Index PFMex.

The fourth item asked participants whether they felt that PFM exercise was important for their health and created the Index PFMimp.

PFMtot was an index created to evaluate non-validated items 2, 3 and 4 combined. In this way, it was possible to analyze the grouping of PFM-related knowledge (PFMexK), importance (PFMimp) and commitment (PFMex).

The final index, PFinfo, identify participants (particularly those in the control group) who noted that they had sought pelvic floor health information since the previous online survey.

Data Analysis

Data was collected and analyzed from the three online surveys, administered at Time 1, Time 2 and Time 3. Each segment of the survey was examined separately using the statistical analysis appropriate for the nature of the collected data.

Demographic Information

To ascertain the homogeneity of the three groups, each of the birthing intervention variables (epidural, episiotomy, perineal tear, vacuum and forceps extraction) was individually analyzed using a two-way Chi Square analysis, with Type II Error considered. The Chi Square tests were completed with the use of a specially designed Excel template to which the data for each of the variables was imported.

Additionally, the five birthing interventions were combined into an index to determine the total number of birthing interventions. This continuous data allowed group comparison with one-way ANOVA testing of the total number of interventions that each participant had experienced during birthing. Type II Error was considered here as well.

Pelvic Floor Health Knowledge Information (PIKQ Data)

For the PIKQ data collected at Times 1, 2 and 3, three variables were tested; the PIKQ with all 24 items included, the PIKQ-Incontinence variable consisting of its 12 corresponding items, plus the variable PIKQ-POP with its 12 items. A three-group Kruskal-Wallis comparison at each of the three variables at each of the three times, Time 1, Time 2 and Time 3, was used to note differences between Groups A, B and C on all three occasions. Significant findings required the use of a Mann Whitney U post-hoc analysis to determine which group, or groups, showed significance.

Furthermore, a paired Wilcoxon analysis was used to compare the three knowledge-related variables at Time 1 to Time 2, and repeated for comparison of Time 2 to Time 3. It is important to note that, while this test is based on individual changes noted between Time 1 and Time 2, and again between Time 2 and Time 3, the conclusions drawn from these results reflect changes within the groups and not the individual participants. In addition to the non-parametric tests, the PIKQ data was further analyzed using ANOVA for additional examination (for details see section 'Analysis of the BIOPFD' following).

PFD Symptom & PFD-Related QoL Information (PFDI & PFIQ Data)

The indices related to the PFDI-20, PFDI-20(+2) and PFIQ-7 data at Time 1 and Time 3 online surveys were evaluated using the ANOVA for three groups, at two times, with post-hoc Tukey analysis used to focus specifically on how the groups differ in terms of change from baseline (for details see section 'Analysis of the BIOPFD' following).

PFDI-20(+2) Tool

As the PFDI-20 tool did not include any items addressing pelvic pain and sexual dysfunction, for this research application it was not considered to fully assess all facets of PFD. To compensate for this, two items were added creating the PFDI-20(+2). As only the PFDI-20 had been previously validated, Cronbach's Alpha was used to determine the validity of the now 22 items.

Furthermore, since Group C, the control group, did not attend any of the education sessions, the data collected from their PFDI-20(+2) responses on the first and third surveys was used in determining test-retest reliability. Paired t tests were completed to analyze this subset data comparing Time 1 and Time 3 responses.

5 Non-Validated PFD & PFM Exercise Items

A combination of Descriptive Analysis and ANOVA testing was used for comparison of the four non-validated items collected at Time 1, and the five non-validated items collected at Time 2 and Time 3. This was done to determine if the participants' views toward the presence of PFD symptoms, and the importance of PFM exercise had changed throughout the study.

The first non-validated question addressed the awareness of the presence of PFD symptoms at Times 1, 2 and 3. The fifth non-validated question was included in Time 2 and Time 3 surveys to track whether or not members of the control group had independently sought any information regarding pelvic floor health. Descriptive Analysis was used for analysis of both of these non-validated items.

The remaining non-validated questions, items 2, 3 and 4 were all related to PFM exercise and their indices were analyzed using ANOVA and Tukey testing (for details see the following section 'Analysis of the BIOPFD').

Analysis of the BIOPFD

Because of the nature of this study design, ANOVA for mixed design was the main tool used to analyze 33 of the 35 calculated BIOPFD (with the exceptions being Index INTERV, analyzed with a one-way ANOVA, and Index HavePFD, analyzed using Descriptive Analysis).

The analysis provided two types of error; Error 1 measured the variance between Subjects with the Groups, and Error 2 measured the interaction of Time x Subjects within groups. Error 1 was used to test the significance of the differences between the Groups while Error 2 tested the significance of the differences between the Times and also the interaction of Group x Time. It is noted that the differences between Groups and between the Times are not valuable to the study and that the interaction Group x Time was the main interest of this study. This interaction compares the effect of Time on the three groups. All of the ANOVA were followed by comparing the means of significant effects using post-hoc Tukey tests.

For indices of surveys collected at Time 1, Time 2 and Time 3, the allocation of the DF for the ANOVA was as follows:

Source of Variation	**DF**
Between Groups	2
Error 1 (between Subjects within Groups)	142
Total 1 (between Subjects)	144
Between Times	2
Interaction (Groups x Times)	4

Error 2 (Times x between Subjects within Groups)	284
Total Variation	434

However, indices related to PFD symptoms (PFDI-20(+2) data) and QoL related to PFD (PFIQ-7 data) were measured at Time 1 and Time 3 only. Accordingly, the ANOVA for these indices was as follows:

Source of Variation	**DF**
Between Groups	2
Error 1 (between Subjects within Groups)	142
Total 1 (between Subjects)	144
Between Times	1
Interaction (Groups x Times)	2
Error 2 (Times x between Subjects within Groups)	142
Total Variation	289

These ANOVA and the Tukey tests were pre-programed in an Excel template linked to the Master Data Sheet, where the data for the BIOPFD reside. A change in the variable name produced a corresponding result sheet (with ANOVA table) for the new variable.

RESULTS

SPSS and Excel software programs were used to analyze the data collected. The following details the results of the extensive analyses completed for this research study. The order of the analyses will be presented as follows;

- Demographics
- Knowledge of pelvic floor health (PIKQ)

- Presence of PFD symptoms (PFDI-20 and PFDI-20(+2))
- QoL because of the PFD symptoms (PFIQ-7)
- Awareness to the presence of one's own PFD symptoms
- Pelvic Floor Muscle (PFM) Exercise knowledge, importance and commitment (PFM Total)

This chapter begins with the analysis of the demographic variables to determine the homogeneity of the three study groups. This is followed by the analysis to determine what effect, if any, the pelvic floor health and PFM exercise education session(s) had on pelvic floor health knowledge. Initially, the pelvic floor knowledge was analyzed as a complete index (all 24 items on the PIKQ) and then separated into its two domains of PIKQ-incontinence and PIKQ-POP to determine if the pelvic floor knowledge acquisition differed in any way between the incontinence-related information and the prolapse-related information.

The next analysis was to determine whether or not female volunteers working in an office environment had any PFD symptoms, and if so, to determine if they were aware of the presence of these PFD symptoms. Further, did the pelvic floor health and PFM exercise education impact the prevalence of PFD symptoms, or the QoL related to these symptoms?

The final stage of analysis was to evaluate the effect of the pelvic floor health and PFM exercise education on knowledge related specifically to PFM exercise, the importance of PFM exercise to one's overall health, and whether or not the education session(s) altered participants' commitment to performing PFM exercises.

As the analyses for this study are numerous, each analysis begins with a brief summary of the results for ease of reference, followed by the detailed statistical results. Each summary includes a corresponding visual chart, while the detailed statistical results

include a corresponding table comprised of all specifics of the analysis, such as ‘degrees of freedom’, ‘F-values’, ‘means’, ‘standard error’, etc.

The opening summary was included for all primary analyses; Index PIKQ and its two corresponding domains, the PFD symptom analysis of Index PFDI-20 and its three corresponding domains, plus (because of the addition of two sexual dysfunction items), Index PFDI-20(+2) with its five corresponding domains, the QoL analysis of Index PFIQ-7 and its three corresponding domains, and finally, the PFM exercise analysis of Index PFM Total, and its three corresponding domains. In the interest of the length of this document, this summary was included only for the primary analyses and not for secondary analyses of the sub-categories and sub-sub-categories of the PFDI-20(+2) domains.

Demographic Information

All demographic data collected was used to determine whether the three groups were homogeneous with respect to their demographics. This was accomplished by subjecting each of the demographic variables to a two-way Chi Square. analysis Type II error was then examined to test for homogeneity.

None of the 15 variables examined produced significant p-values and, therefore, no significant differences were noted between the composition of the three groups. With regard to homogeneity, the probabilities range between 10.8% and 99.5%, overall. With 90% confidence, Groups A, B and C are homogenous with respect to age, race/ethnicity,

overall health and perineal tearing. For a complete listing of the Demographic Chi Square results, see Table 17. Demographics of Participants.

Age of Participants

For the age of the participants, while nine categories were offered (from '18-29' to '99 and over'), all responses fell within five age categories typically considered 'working age', ranging from '18-29' to '60-69'. With three groups and five categories compared, p=0.995, indicating that there is greater than 99% probability that the groups are homogeneous with regard to age (see Figure 6. Age of Participants).

Education of Participants

When participants were asked for their highest level of education completed, the seven responses offered ranged from 'Less than High School' to 'University Graduate Degree', and all seven categories showed representation. For the comparison of Groups A, B and C education levels, p=0.108, indicating no significant difference was detected (see Figure 7. Highest Level of Education of Participants). Of all demographic variables analyzed, this was the lowest p-value noted; however, it is doubtful that a variance in education level would have any notable effect on the participants' responses to the surveys.

Marital Status of Participants

When participants were asked about their marital status, five responses were offered, and all five categories showed representation. For the comparison of Groups A, B and C marital status, the Chi Square analysis yielded a p-value of 0.296. There is a

greater than 29% probability that the three groups are homogeneous with regard to marital status (see Figure 8. Marital Status of Participants).

Annual Household Income of Participants

With regard to participants' income, six responses were offered, with all six categories represented; however, the 'Prefer to not answer' selections from Group A (n=4), B (n=7) and C (n=5) were removed as a category during the Chi Square analysis leaving five categories. For the comparison of Groups A, B and C income levels, p=0.710, indicating no significant difference was detected. The probability that the groups are homogeneous with regard to household income is greater than 71% (see Figure 9. Annual Household Income of Participants).

Race/Ethnicity of Participants

With examination of data related to participants' race/ethnicity, five categories were represented. For the comparison of Groups A, B and C race/ethnicity demographic, the Chi Square analysis yielded a p-value of 0.928. This high p-value indicates that the probability of the three groups being homogeneous with regard to race/ethnicity is greater than 92% (see Figure 10. Race/Ethnicities of Participants).

Overall Health of Participants

When participants were asked about their overall health status, the three responses offered all showed representation. For the comparison of Groups A, B and C health status, the Chi Square analysis yielded a p-value of 0.920. This high p-value indicates a high degree of homogeneity between the three groups with 92% probability that the

groups are homogeneous in overall health status (see Figure 11. Overall Health Status of Participants).

Number of Pregnancies

With respect to participants' obstetrical history, several items were asked. For the number of times that participants' had been pregnant, six responses were offered, with all six categories represented. For the comparison of Groups A, B and C for number of pregnancies experienced, the Chi Square analysis yielded a p-value of 0.523. The probability that the groups are homogeneous with regard to the number of pregnancies experienced is greater than 52% (see Figure 12. Number of Pregnancies of Participants).

Number of Vaginal Deliveries

When participants were asked how many vaginal deliveries they had experienced, the six responses offered all showed representation. For the comparison of Groups A, B and C with regard to this demographic variable, the Chi Square analysis yielded a p-value of 0.50. There is a greater than 50% probability that the groups are homogeneous in the number of vaginal deliveries experienced (see Figure 13. Number of Vaginal Deliveries of Participants).

Number of Caesarean Section Deliveries

When participants were asked how many caesarean section deliveries they had experienced, the six responses offered showed representation in four. For the comparison of Groups A, B and C with regard to this demographic variable, the Chi Square analysis yielded a p-value of 0.612. There is a greater than 61% probability that the three groups

are homogeneous with regard to the number of caesarean section deliveries experienced (see Figure 14. Number of Caesarean Sections of Participants).

Birthing Interventions

When participants were asked about the birthing interventions that they had experienced, each variable was analyzed independently. Further, an index was created, encompassing participants' total number of birthing interventions. Each individual intervention was analyzed comparing two categories, those who had experienced the birthing intervention and those who had not.

With regard to epidurals, Chi Square analysis yielded a p-value of 0.604, and, therefore, the probability that the three groups are homogeneous with regard to the number of epidurals experienced by participants is greater than 60% (see Figure 15. Birthing Interventions of Participants).

For episiotomies, p=0.322, indicating the probability that the three groups are homogeneous with respect to episiotomy experienced by participants is greater than 32% (see Figure 15. Birthing Interventions of Participants).

When analyzing the perineal tears noted by participants, p=0.936, indicating that there is greater than 93% probability the three groups are homogeneous with respect to perineal tearing experienced by (see Figure 15. Birthing Interventions of Participants).

The next birthing intervention was vacuum extraction with Chi Square analysis yielding a p-value of 0.350. This indicates that the probability of the three groups being homogeneous with regard to vacuum extraction experienced is greater than 35% (see Figure 15. Birthing Interventions of Participants).

The final birthing intervention analyzed was forceps extraction with Chi Square analysis yielding a p-value of 0.682. This indicates that there is a greater than 68% probability of the three groups being homogeneous with regard to forceps use during delivery (see Figure 15. Birthing Interventions of Participants).

The Index INTERV was analyzed using ANOVA so that the number of birthing interventions experienced by participants could be compared. For the comparison of Groups A, B and C with regard to this demographic index, the ANOVA analysis yielded a p-value of 0.571, indicating that there is no significant difference between the three groups with regard to the total number of birthing interventions experienced by participants (see Figure 16. Total Birthing Interventions of Participants, and Table 18. Total Birthing Interventions of Participants: ANOVA).

Menstrual Stage of Participants

The final demographic variable compared was 'Menstrual Stage' of participants. The five responses offered all showed representation. For the comparison of Groups A, B and C with regard to this demographic variable, Chi Square analysis yielded a p-value of 0.696. There is a 70% probability that the three groups are homogeneous with regard to menstrual stage (see Figure 17. Menstrual Status of Participants).

Pelvic Floor Health Knowledge Information (PIKQ Data)

All knowledge data related to pelvic floor health was collected via the PIKQ tool (24 items). This data was analyzed using non-parametric methods, ANOVA, and

Descriptive Analysis. The data was analyzed for the PIKQ as a complete tool, and then subdivided to assess the results for the two PIKQ domains; PIKQ-Incontinence and PIKQ-POP independently.

Summary of the PIKQ Indices

Figure 18. Results of PIKQ Indices Over Times 1, 2 and 3, displays the patterns of each of the three PIKQ indices (PIKQ, PIKQ-Incontinence and PIKQ-POP) for each of the three groups.

Summary of Index PIKQ

For the complete PIKQ index (24 items), all three groups began at basically equal level of pelvic floor health knowledge, at Time 1. Figure 18 clearly shows that, following the pelvic floor health and PFM exercise education intervention given to Groups A and B, these two groups noted an equal and dramatic rise in the combined incontinence and POP knowledge levels, while Group C remained fairly unaffected, at Time 2. It also shows that following the re-education intervention given to Group A only, a continued rise in knowledge levels for both Groups A and B was noted; however, a slightly greater rise was seen for Group A compared to Group B. The slope for the two intervention groups was not nearly as steep between Times 2 and 3 as compared to the slope between Time 1 and Time 2. The slope for Group A was restricted by a 'ceiling effect' as the maximum score was reached. Very little change was noted, between Times 1, 2 and 3, for Group C.

Summary of Index PIKQ-Incontinence

For the PIKQ-Incontinence index (12 items), all three groups began at basically equal level of pelvic floor health knowledge, at Time 1. Figure 18 clearly shows that following the pelvic floor health and PFM exercise education intervention given to Groups A and B, these two groups noted a fairly equal and dramatic rise in incontinence knowledge levels and reached close to maximum levels, while Group C remained unaffected, at Time 2. It also shows that following the re-education intervention given to Group A only, a continued rise in knowledge level was noted for Group A, albeit a small increase due to a 'ceiling effect'; however, for Group B, a slight decrease in knowledge level was noted. Group C remained fairly constant between Time 1, Time 2 and Time 3.

Summary of Index PIKQ-POP

For the PIKQ-POP index (12 items), all three groups began at basically equal level of pelvic floor health knowledge, at Time 1. Interestingly, this reference point was notably lower than the starting point for incontinence knowledge, at Time 1. Figure 18 clearly shows that following the pelvic floor health and PFM exercise education intervention given to Groups A and B, these two groups noted an equal and dramatic rise in POP knowledge levels, while Group C noted a minor drop in POP knowledge, at Time 2. It also shows that following the re-education intervention given to Group A only, a continued rise in knowledge levels was seen for Group A and also for Group B. That noted, a greater rise was observed for Group A compared to Group B, with Group A reaching a maximum 'ceiling effect'. The slope for Group B was not as steep between Times 2 and 3 compared to the slope between Time 1 and Time 2, while the slope of

Group A was only slightly less steep from Time 2 to Time 3 compared to its slope between Time 1 and Time 2. For Group C, a minor overall change was noted between Times 1, 2 and 3, with a slight drop detected at Time 2 followed by an increase in POP-related knowledge at Time 3.

Detailed Results of PIKQ Analyses

It was hypothesized that at Time 1, no differences between the three groups would be detected. Following the education intervention given to Groups A and B, Time 2, it was hypothesized that a significant increase in pelvic floor health knowledge would be noted in Groups A and B, but no change was expected for control Group C. At Time 3, if a drop in score was noted for Group B but not for Group A, or, a significant further rise in score was noted in Group A but not for Group B, then the re-education variable (given to Group A) would be identified as beneficial and warranted.

PIKQ Results: Non-Parametric Analysis

The PIKQ was analyzed as a complete tool of 24 items followed by analysis of each of the PIKQ domains. Domain PIKQ-Incontinence consists of the initial 12 items and Domain PIKQ-POP is comprised of the final 12 items.

PIKQ (24 items)

At Time 1, all participants completed the first online survey, which included the 24-item PIKQ tool to assess the baseline pelvic floor knowledge of Groups A (n=48), B

(n=48) and C (n=49). As no intervention had taken place, it was anticipated that there would be no significant difference noted when comparing the pelvic floor health knowledge of the three groups. To determine if this was indeed so, Kruskal-Wallis testing was implemented to analyze the PIKQ data. At Time 1, the p-value was found to be not significant ($p=0.461$). As no significance was found, post-hoc testing was not needed (see Table 19. PIKQ Results: Non-Parametric Testing).

At Time 2, the initial intervention (a pelvic floor health education and PFM exercise session), had been administered to the participants of Group A and B and the second online survey was completed by all three groups. It was anticipated that the pelvic floor health knowledge of Groups A and B would be significantly higher than that of Group C (the control group), at Time 2. To confirm this hypothesis, a Kruskal-Wallis test compared the PIKQ results of the three groups at Time 2, resulting in a highly significant p-value of $p<0.001$.

To determine which groups were responsible for this significant difference, post-hoc Mann-Whitney U tests were implemented, comparing each pair of groups. Groups A versus B (both groups had received the same intervention at this point) resulted in $p=0.508$, showing no significant difference between the groups. Groups A versus C, however, resulted in a highly significant p-value of $p<0.001$, with the mean for Group A being significantly greater than the mean for Group C. The same highly significant result of $p<0.001$ was noted when Group B was compared to the control group, Group C, with the mean for Group B being significantly larger than the mean for Group C (see Table 19. PIKQ Results: Non-Parametric Testing).

Approximately two months following the initial education intervention, a second pelvic floor health and PFM exercise education session was given to the participants of Group A only. This allowed assessment of the effect of a 're-education' component on pelvic floor health knowledge. Following this second education session, at Time 3, the online survey was completed for the third and final time. To analyze these results, Kruskal-Wallis testing was again used to compare the responses of Groups A, B and C, at Time 3. This produced another highly significant p-value of $p<0.001$.

To determine which groups were responsible for this significant difference, post-hoc Mann-Whitney U tests were again completed, comparing each pair of groups. Groups A versus C, and Groups B versus C again resulted in highly significant p-values, $p<0.001$ (with the means of both Groups A and B both being significantly higher than the mean of Group C). There was also a highly significant difference ($p<0.001$) noted at Time 3, with the knowledge level of Group A (the re-education group) being significantly greater than that of Group B (see Table 19. PIKQ Results: Non-Parametric Testing).

Furthermore, Wilcoxon Signed Rank tests were used to compare the results of all participants combined, over time. When Time 1 results (N=145) were compared to Time 2 results (N=145), Time 2 was significantly higher than Time 1 ($p<0.001$). These same highly significant results were produced when Time 2 was compared to Time 3 (N=145), with the knowledge levels at Time 3 being significantly higher than at Time 2 ($p<0.001$), and again when comparing Time 1 to Time 3 ($p<0.001$) (see Table 19. PIKQ Results: Non-Parametric Testing).

- **PIKQ-Incontinence (12 items)**

The PIKQ is comprised of two domains, allowing for separate assessment of incontinence-related knowledge and knowledge pertaining to prolapse of the pelvic organs. To determine whether participants' knowledge-acquisition differed between these two domains, the initial 12 items of the PIKQ (PIKQ-Incontinence), and the final 12 items of the PIKQ (PIKQ-POP), were analyzed independently.

At Time 1, participants completed the initial online survey to assess the baseline PIKQ-Incontinence, for Groups A (n=48), B (n=48) and C (n=49). As no intervention had taken place, it was anticipated that there would be no significant difference noted when comparing the pelvic floor health incontinence-related knowledge of the three groups. To determine if this was so, Kruskal-Wallis tests were implemented to analyze the PIKQ-Incontinence data. At Time 1, the p-value was not significant ($p=0.300$). As such, no post-hoc testing was necessary (see Table 19a. PIKQ-Incontinence Results: Non-Parametric Testing).

At Time 2, immediately following the initial pelvic floor health and PFM exercise education intervention (administered to the participants of Groups A and B), the second online survey was completed by all three groups. It was hypothesized that the PIKQ-Incontinence scores of Groups A and B would be significantly higher than the scores of Group C (the control group). To confirm this hypothesis a Kruskal-Wallis test compared the PIKQ-Incontinence results of the three groups at Time 2. This test produced a highly significant p-value of $p<0.001$.

To determine which of the three groups were significantly different from each other, post-hoc Mann-Whitney U tests were completed, comparing each pair of groups.

Groups A versus B (who had received the same intervention at that point), were not significantly different ($p=0.591$). Groups A versus C resulted in $p<0.001$, with the mean of Group A being significantly greater than the mean of Group C. The same highly significant results ($p<0.001$) were noted when Group B was compared to Group C, with the mean of Group B being significantly higher than the mean of Group C (see Table 19a. PIKQ-Incontinence Results: Non-Parametric Testing).

Approximately two months following the initial education intervention, a second pelvic floor health and PFM exercise education session was given only to participants of Group A. This allowed assessment of the effect a 're-education' component on incontinence-related knowledge. Immediately following this second education session, at Time 3, the online survey was completed for the final time.

To analyze these results, Kruskal-Wallis testing compared the PIKQ-Incontinence responses of Groups A, B and C. This produced another highly significant p-value of $p<0.001$. To determine which groups were significantly different, post-hoc Mann-Whitney U tests were completed comparing each pair of groups. This time, at Time 3, Groups A versus B resulted in a highly significant finding of $p<0.001$, with the mean of Group A being significantly larger than the mean of Group B. Groups A versus C, and Groups B versus C each resulted in $p<0.001$, with the means of Group A and Group B being significantly greater than the mean of Group C (see Table 19a. PIKQ-Incontinence Results: Non-Parametric Testing).

Furthermore, Wilcoxon Signed Rank tests were used to compare the results of all participants combined, over time. When Time 1 results were compared to Time 2 results (of all three groups combined, N=145), significant difference was shown ($p<0.001$) with

the mean of Time 2 being significantly greater than the mean of Time 1. This same highly significant result ($p<0.001$) was produced when Time 1 was compared to Time 3 (N=145) with the mean of Time 3 being significantly greater than the mean of Time 1. However, when the incontinence-related knowledge data was compared from Time 2 to Time 3, a non-significant Wilcoxon-Signed Rank result ($p=0.362$) was produced (see Table 19a. PIKQ-Incontinence Results: Non-Parametric Testing).

- **PIKQ-POP (12 items)**

As with the Domain PIKQ-Incontinence data, the Domain PIKQ-POP data was independently analyzed. At Time 1, all participants completed the first online survey which produced a POP-related knowledge baseline for Groups A (n=48), B (n=48) and C (n=49). Since no intervention had taken place, it was anticipated that there would be no significant difference noted when comparing the POP-knowledge of the three groups. To determine if this was actually so, a Kruskal-Wallis test was completed. At Time 1, a non-significant result ($p=0.807$) was produced and, therefore, no post-hoc testing was necessary (see Table 19b. PIKQ-POP Results: Non-Parametric Testing).

At Time 2, immediately following the initial pelvic floor health education intervention administered to the participants of Groups A and B, the second online survey was completed by all three groups. It was hypothesized that at this point the POP-related knowledge of Groups A and B (both having received the same intervention at this point) would be significantly higher than that of Group C (the control group). To confirm this hypothesis, a Kruskal-Wallis test compared the PIKQ-POP results of the three groups at Time 2. This resulted in a highly significant p-value of $p<0.001$.

To determine which groups were significantly different, post-hoc Mann-Whitney U tests were used, comparing each pair of groups. Groups A versus B failed to produce a significant difference ($p=0.259$). Groups A versus C produced a significant difference ($p<0.001$), with the mean of Group A being significantly greater than the mean of the control group (Group C). The same highly significant results ($p<0.001$) were noted when Group B was compared to Group C, with the mean of Group B being significantly higher than the mean of Group C (see Table 19b. PIKQ-POP Results: Non-Parametric Testing).

Approximately two months following the initial education intervention a second pelvic floor health and PFM exercise education session was given only to participants of Group A. This allowed assessment of the impact that a 're-education' component may have on POP-related knowledge. Following this second education session, Time 3, the online survey was completed for the final time. To analyze these results, Kruskal-Wallis testing compared the responses of Groups A, B and C. This produced another highly significant p-value of $p<0.001$.

To determine which groups were significantly different, post-hoc Mann-Whitney U tests were completed comparing each pair of groups. This time, at Time 3, Groups A versus B produced a highly significant difference ($p<0.001$), with the mean of Group A being significantly greater than the mean of Group B. As expected Groups A versus C, and Groups B versus C also each resulted in $p<0.001$, with the means of Groups A and B being significantly greater than the mean of Group C (see Table 19b. PIKQ-POP Results: Non-Parametric Testing).

Furthermore, Wilcoxon Signed Rank tests were used to compare the results of all participants combined, over time. When Time 1 results were compared to Time 2 results

(of all 3 groups combined, N=145), significant difference was shown ($p<0.001$) with Time 2 being significantly greater than Time 1. These same highly significant results ($p<0.001$) were determined when Time 2 was compared to Time 3 (with the mean of Time 3 being significantly greater than that of Time 2), and again, when Time 1 was compared to Time 3 (with the mean of Time 3 being significantly greater than the mean of Time 1) (see Table 19b. PIKQ-POP Results: Non-Parametric Testing).

PIKQ Results: ANOVA

The PIKQ data was further analyzed using ANOVA testing and Tukey post-hoc tests, as appropriate. As the group sizes were not identical but very close to equal (Group A n=48, Group B n=48, Group C n=49), the harmonic means were used for n in Tukey post–hoc testing (as per SPSS software) (126). As with the non-parametric methods, the PIKQ results were initially analyzed as a complete tool including all 24 items (Index PIKQ), and later subdivided into its two, 12-item domains (Index PIKQ-Incontinence and Index PIKQ-POP) to determine if knowledge-acquisition differed between these divisions. For all continuous data analyzed with ANOVA and post-hoc Tukey tests, the BIOPFD indices (detailed within the Methodology chapter) were used.

PIKQ (24 items)

The ANOVA results of the Index PIKQ showed highly significant findings. The important contribution offered by ANOVA is its analysis of the interaction effect between 'Times' and 'Groups'. The Time x Group interaction produced highly significant findings of $p<0.001$.

For Group A, post-hoc Tukey tests of the interactions showed that Time 1 to Time 2 resulted in highly significant increase in mean knowledge score ($p<0.001$), Time 1 to Time 3 (with the mean at Time 3 being significantly higher than at Time 1), and again for Time 2 to Time 3 (with the mean knowledge score significantly increased at Time 3 from Time 2). The pelvic floor health knowledge of Group A participants significantly increased following the initial education session, and showed a further significant increase following the re-education session.

The Group B interactions also showed p-values of $p<0.001$ for comparisons between Time 1 versus Time 2 (with the mean at Time 2 being significantly greater than the mean at Time 1), and Time 1 versus Time 3 (with the mean at Time 3 being significantly greater than at Time 1); however, no significant difference was noted when comparing Time 2 versus Time 3 for this group. The pelvic floor health knowledge significantly increased following the initial education session received between Time 1 and Time 2 and then no significant change was noted between Time 2 and Time 3 as Group B did not receive the second education session.

Finally, for Group C, no significant difference was noted from Time 1 to Time 2, from Time 2 to Time 3, nor from Time 1 to Time 3 for Group C (see Table 20. PIKQ Results: ANOVA, and Figure 18. Results of PIKQ Indices Over Times 1, 2 and 3).

The ANOVA interactions were also analyzed comparing each group at each of the three times. At Time 1, no intervention had been implemented and post-hoc Tukey tests comparing Group A to Group B, Group A to Group C and Group B to Group C showed no significant differences.

At Time 2, no significance was noted between Groups A and B (both had received the same intervention at this point); however, $p<0.001$ results were produced during comparisons of Groups A and C (with the mean of Group A being significantly greater than the mean of Group C) and again for Groups B and C (with the mean of Group B being significantly greater than the mean of Group C).

Finally, when the groups were compared at Time 3, significant differences were produced for all group comparisons. Groups A versus B showed significant differences ($p<0.05$), with the mean of Group A being significantly greater than the mean of Group B, and, Groups A versus C and Groups B versus C again showed highly significant findings of $p<0.001$ (with the means of Groups A and B being significantly greater than the mean of Group C).

The pelvic health knowledge of the three groups was significantly different from each other at the conclusion of the study. At Time 3 the mean of Group A, the group receiving the initial and re-education sessions was significantly higher than the means of both Groups B and C, while the mean of Group B, the group receiving the initial education session only, was significantly higher than the mean of Group C, the control group who did not receive any education intervention (see Table 20. PIKQ Results: ANOVA, and Figure 18. Results of PIKQ Indices Over Times 1, 2 and 3).

- **PIKQ-Incontinence (12 items)**

As with the non-parametric tests, the PIKQ data was analyzed as a complete index comprised of 24 items and then examined by domain, with the first 12 of 24 items related to Domain PIKQ-Incontinence and the last 12 items related to Domain PIKQ-POP.

The ANOVA results of the Index PIKQ-Incontinence showed highly significant findings, just as noted with evaluation of the whole PIKQ index. With regard to the interactions, the Time x Group interaction produced highly significant findings of $p<0.001$.

Post-hoc Tukey tests of the interactions comparing Time 1 to Time 2 showed a highly significant increase ($p<0.001$) for Group A (with the mean at Time 2 being significantly greater than at Time 1 for Group A), and again, comparing Time 1 to Time 3 (with Time 3 being significantly greater than at Time 1 for Group A). However, unlike the Index PIKQ (which is comprised of all 24 pelvic health knowledge items), when comparing Time 2 versus Time 3, the re-education failed to produce significant findings for the Index PIKQ-Incontinence (12 of the 24 pelvic health knowledge items).

For Group B, Time 1 versus Time 2, and Time 1 versus Time 3 produced highly significant differences of $p<0.001$ (with the means at Times 2 and 3 being significantly greater than the mean at Time 1, respectively); however, no significant difference was noted when comparing Time 2 versus Time 3 for Group B. This was as expected as Group B did not receive the re-education session.

Finally, for the control Group C, no significant differences for comparisons of Time 1 to Time 2, Time 2 to Time 3, or Time 1 to Time 3 (see Table 20a. PIKQ-Incontinence Results: ANOVA, and Figure 18. Results of PIKQ Indices Over Times 1, 2 and 3).

The ANOVA interactions also compared the means of the three groups at each of the three times. At Time 1, Tukey post-hoc tests for PIKQ-Incontinence scores showed no significant differences between the three groups.

At Time 2, there was no significant difference of scores between the two groups who received the education (Groups A and B); however, both Groups A and B were significantly higher ($p<0.001$) than the control group (Group C).

Finally, at Time 3, following the re-education session, unlike the Index PIKQ, the Index PIKQ-Incontinence comparison of Groups A versus B showed no significant differences. Both Groups A and B maintained their knowledge superiority to the control group (Group C), with $p<0.001$ (see Table 20a. PIKQ-Incontinence Results: ANOVA, and Figure 18. Results of PIKQ Indices Over Times 1, 2 and 3).

- **PIKQ-POP (12 items)**

The ANOVA results of the Index PIKQ-POP showed highly significant differences, just as it did with evaluation of the Index PIKQ (comprised of all 24 pelvic floor health knowledge items) and Index PIKQ-Incontinence (12 incontinence-related items of the 24 pelvic health items). With regard to the interactions between Times and Groups, the Time x Group interaction produced highly significant findings, with $p<0.001$.

As expected, post-hoc Tukey tests of the interactions noted highly significant changes ($p<0.001$) when comparing Time 1 and Time 2, Time 1 and Time 3 and again when comparing Time 2 versus Time 3 for Group A (with the mean being significantly higher at Time 2 than Time 1, Time 3 compared to Time 1, and again significantly higher at Time 3 compared to Time 2, for Group A), identifying that re-education produced further significant findings for the PIKQ-POP data as the mean continue to rise throughout the study.

The Group B interactions showed p-values of $p<0.001$ for Time 1 versus Time 2 (with the mean being significantly greater at Time 2 than at Time 1 for Group B), Time 1

versus Time 3 (with the mean being significantly greater at Time 3 than Time 1), and, unexpectedly (as Group B did not receive the second education session), again when comparing Time 2 versus Time 3 (with the mean being significantly greater at Time 3 than Time 2 for Group B).

Finally, no significant differences for comparisons of Time 1 versus Time 2, and Time 1 versus Time 3 for Group C; however, the comparison of Time 2 versus Time 3 for Group C PIKQ-POP index, produced a significant difference, of $p<0.05$ (see Table 20b. PIKQ-POP Results: ANOVA, and Figure 18. Results of PIKQ Indices Over Times 1, 2 and 3).

At Time 1, the Tukey post-hoc tests for PIKQ-POP scores showed no significant differences between the three groups.

At Time 2, there were no significant differences between the scores for the two groups receiving the education (Groups A and B); however, both Groups A and B were significantly higher ($p<0.001$) than the control group (Group C).

Finally, at Time 3, after the re-education of Group A participants, the mean scores of Group A were significantly higher ($p<0.05$) than the scores of Group B. These two groups maintained their superiority over the control group, Group C, with $p<0.001$ for comparisons of Groups A versus C, and Groups B versus C.

These overall findings of the Index PIKQ-POP, like the results of Index PIKQ, were as expected with Groups A and B showing a significant increase in POP-related knowledge following the initial education session at Time 2 (and no change noted for the control group), and Group A, the re-education group, showing a further significant increase in POP-related knowledge at Time 3.

The findings differing from the anticipated results were the significant increases in POP knowledge noted for Group B ($p<0.001$) and Group C ($p<0.05$), between Time 2 and Time 3, as neither group had received any intervention during this time period (see Table 20b. PIKQ-POP Results: ANOVA, and Figure 18. Results of PIKQ Indices Over Times 1, 2 and 3).

PIKQ Results: Descriptive Analysis

Interesting information was noted from the responses to the 24 PIKQ items, from the beginning of the study (Time 1) to the end (Time 3), as outliers were easily identified. Several of the items 'stood out' from the rest, producing information relevant to clinicians working in the field of pelvic floor health.

With regard to the 12 incontinence-related knowledge items, at Time 1, two questions resulted in notably low numbers of correct responses compared to the remaining questions (see Table 21a. PIKQ-Incontinence Results: Descriptive Analysis). "Some medications may cause urinary incontinence." is a correct statement; however, only 25% (36 out of 145) of the participants knew this fact. As well, "Doctors can do special types of bladder testing to diagnose urine leakage." is also a correct statement and received a similarly low awareness score of 26% (37 correct responses out of 145). This information becomes important in identifying potential knowledge gaps during clinical education of patients, and during efforts to raise public awareness.

Furthermore, three other questions received notably low scores and are worthy of identification and given special attention when educating patients in clinic, and education of the general public. Identification of these items is critical as two items pertain specifically to understanding and appreciating that incontinence is correctable. "Most

people who leak urine can be cured or improved with some kind of treatment." is a true statement that less than half of the participants correctly answered (68 out of 145). Only 47% of the participants knew that incontinence was treatable. Furthermore, for the incorrect statement, "Surgery is the only treatment for urinary leakage." only 49% (71 of 145) of the participants recognized this as false.

Another notable finding was the erroneous statement that, "Once people start to leak urine, they are never able to control their urine again." with only 75 out of 145 participants believing this was false. Approximately half of the respondents did not feel that their own actions could have any positive impact on the dysfunction.

While the overall scores related to incontinence knowledge are very low, these outliers even more so, draw attention to the fact that most participants did not know that incontinence is curable and correctable, nor were most aware that medical treatments options other than surgery exist.

When reviewing the data at Time 3, it is important to note that for those participants receiving the pelvic floor health and PFM exercise education (Groups A and B), the items receiving the highest correct scores were, "Certain exercises can be done to help to control urine leakage." scoring 100%, "Giving birth many times may lead to urine leakage." scoring 100%, "Other than pads and diapers, not much can be done to treat leakage of urine." scoring 99% (Group A scored 100%, Group B scored 98%), and, "Once people start to leak urine, they are never able to control their urine again." scoring 99% (Group A scored 100%, Group B scored 98%).

The first statement is correct and with 100% of the intervention-participants now recognizing that PFM exercise can help bladder control, is evidence that this research

study was successful in imparting this critical education message. The second statement is also correct and highlights the need for PFM attention post-partum. The third and fourth statements are incorrect and these high scores reflect the study's successful removal of society's commonly believed fallacies that urinary incontinence can never be corrected and the only option is the lifelong use of incontinence pads and products.

While the incontinence-related knowledge level total of 55% (959/1740) at Time 1 was very low, the POP-related knowledge total of 27% (468/1740) was substantially lower (see Table 21b. PIKQ-POP Results: Descriptive Analysis). Notable outliers at Time 1 were the correct statements that, "A rubber ring called a pessary can be used to treat symptoms of pelvic organ prolapse." scored 7% (10/145) and, "Heavy lifting on a daily basis can lead to pelvic organ prolapse." scored 11% (16/145) and the incorrect statement that, "Doctors can run a blood test to diagnose pelvic organ prolapse." scored 9% (13/145).

At Time 3, the statements answered most correctly by the intervention-participants (those receiving the pelvic floor health education, i.e. Groups A and B) were, "A good way for a doctor to diagnose pelvic organ prolapse is by examining the patient." scored 99% (Group A scored 100%, Group B scored 98%), "certain exercises can help to stop pelvic organ prolapse from getting worse." scored 98% (Group A scored 100%, Group B scored 96%), "Pelvic organ prolapse can happen at any age." scored 99% (Group A scored 100%, Group B scored 98%), "Symptoms of pelvic organ prolapse may include pelvic heaviness and/or pressure." scored 100%, and "Giving birth many times may lead to pelvic organ prolapse." scored 99% (Group A scored 100%, Group B scored 98%), with all of these items being 'true'. The incorrect statement best answered at Time

3 was, “Once a patient has pelvic organ prolapse, not much can be done to help her.” scoring 97% post-education intervention (Group A scored 100%, Group B scored 94%).

At the conclusion of the study, the intervention-participants (Groups A and B) showed a score total of 96% (Group A scored 99%, Group B scored 93%), for incontinence-related knowledge and 94% (Group A scored 99%, Group B scored 89%), for POP-related knowledge. Both content areas showed dramatic improvements between Time 1 baseline scores, to the post-education session(s) Time 3 scores. For both the incontinence and the POP questions, Group A consistently responded more correctly than Group B; however, overall, both groups showed tremendous improvement in correctly responding following the pelvic floor health and PFM exercise education session(s) compared to before the session(s).

PFDI-20(+2) Item Correlation

Cronbach’s alpha is used to assess internal consistency of the scales, or domains, within a tool. A high alpha value would reflect that all items co-vary to the same degree. The PFDI-20 has been shown valid and reliable via rigorous testing, as well as the clinical test of time (126); however, for this research study two items were added to the original 20 items to allow assessment of all five PFD domains. Cronbach’s alpha was determined for domains Bladder Dysfunction, Bowel Dysfunction, POP and Pelvic Pain. In the case of Domain Sexual Dysfunction, the data provided for analysis was ordinal-level and, therefore, Polychoric Correlation was determined for analysis rather than

Cronbach's alpha (see Table 22. PFDI-20(+2): Validating PFD Domains: Cronbach's Alpha).

Of the 22 items related to PFD symptoms, several items provided relevant information regarding more than one domain. Because of this, many items were evaluated in the analysis of multiple PFD domains, as appropriate (see Figure 5. PFD Symptoms Measured by PFDI-20(+2) Items).

For Domain Bladder Dysfunction, seven of the 22 items provided information related to bladder issues (PFDI05, PFDI06, PFDI15, PFDI16, PFDI17, PFDI18, and PFDI19). From these items, Cronbach's Coefficient Alpha was determined with alpha=0.76 at Time 1 and alpha=0.80 at Time 3. While these alphas show a good level of consistency within the domain, it should be noted that removal of PFDI06 would further increase the alpha to 0.77 for Time 1 and 0.82 at Time 3. However, item PFDI06, "Do you ever have to push up on a bulge in the vaginal area with your fingers to start or complete urination?" offers important clinical information that benefits the tool and, therefore, should not be removed.

Domain Bowel Dysfunction is based on information received from nine of the 22 items (PFDI04, PFDI07, PFDI08, PFDI09, PFDI10, PFDI11, PFDI12, PFDI13 and PFDI14). From these items, Cronbach's Coefficient Alpha was determined with alpha=0.82 at Time 1 and alpha=0.83 at Time 3. While these alphas show a good level of consistency within the domain, it should be noted that removal of PFDI09 would slightly increase the alpha to 0.84 at Time 3. That noted, item PFDI09, "Do you usually lose stool beyond your control if stool is well formed?" offers critical clinical information that offsets the benefit of the slight increase in alpha value upon its removal.

Domain POP was created from seven of the 22 items (PFDI01, PFDI02, PFDI03, PFDI04, PFDI05, PFDI06 and PFDI14). From these items, Cronbach's Coefficient Alpha was determined with alpha=0.71 at Time 1 and alpha=0.80 at Time 3. While these alphas show a good level of consistency within the domain, it should be noted that removal of PFDI05 would slightly increase the alpha to 0.72 for Time 1. As in the other items identified as positively impacting the alpha value with their deletion from the tool, the item "Do you usually experience a feeling of incomplete bladder emptying?" offers important clinical value and, therefore, should not be removed. This again is the case for the deletion of PFDI06 as this would increase the Time 3 alpha of Domain POP to alpha=0.82.

Domain Pelvic Pain is comprised of three of the 22 items (PFDI12, PFDI20 and PFDI21). From these items, Cronbach's Coefficient Alpha was determined with alpha=0.53 at Time 1 and alpha=0.59 at Time 3. While these alphas show a decent level of consistency within the domain, it should be noted that removal of PFDI12 would further increase the alpha to 0.57 for Time 1. This again would not be recommended from a clinical standpoint since, "Do you usually have pain when you pass your stool?" gleans important subjective information beneficial for assessment and treatment.

The final scale, Domain Sexual Dysfunction, was comprised of the two items added to the original and previously validated 20 items, PFDI21 and PFDI22. The Polychoric Correlation was found to equal 0.54 at Time 1 and 0.64 at Time 3 and therefore, determined to have a decent level of consistency.

All five PFD domains showed acceptable consistency with some items identified for removal if an increase of alpha was needed. Having said that, each item identified for

removal to increase the alpha value was recognized for its important critical contribution. Furthermore, the tool demonstrated consistency from Time 1 to Time 3 as the values decently agree over the passage of time.

PFDI-20(+2) Item Test-Retest Reliability Results

Test-retest reliability is necessary to show stability of an instrument over time. To evaluate test-retest reliability of the PFDI-20(+2), a paired t test was used to compare the Time 1 and Time 3 PFDI-20(+2) responses of Group C (n=49), the control group. As Group C had not participated in either of the education sessions, their responses were appropriate for testing the stability of the document over time. Very high test-retest reliability was determined with a p-value=1.00 (standard deviation = 6.241).

PFD Symptom Information (PFDI Data)

The data related to symptoms of PFD was collected at two times, Time 1 and Time 3, and analyzed using ANOVA and post-hoc Tukey tests when significant F-values resulted. As the group sizes were not identical but very close to equal (Group A n=48, Group B n=48, Group C n=49), the harmonic means were used for n in Tukey post–hoc testing (as per SPSS software) (126). The p-values related to the interaction between 'Time' and 'Group', or 'Time x Group' interactions are the notable components of the ANOVA evaluation.

The PFD symptom data was divided into PFDI-20 results (a previously validated tool comprised of three equally-weighted PFD domains), PFDI-20 Weighted (the PFDI-20 with each of its 20 items given equal weight rather than its three domains), plus PFDI-20(+2) (the PFDI-20 plus the addition of two sexual function items to allow assessment of five PFD domains, with each of the 22 items given equal weight). The PFDI-20, PFDI-20 Weighted and PFDI-20(+2) were analyzed as individual indices plus, for further examination, the three PFD domains of the PFDI-20 and the five PFD domains of the PFDI-20(+2) were analyzed as eight individual indices. The bladder and bowel domains of the PFDI-20(+2) allowed assessment in even greater detail as these two domains were each dissected into three sub-categories with two sub-sub-categories, adding five more indices to each domain. These five indices related to bladder dysfunction and five indices related to bowel dysfunction are not part of the primary analyses of this study but rather, are secondary analysis granting additional clinical information for each of the two domains.

A brief summary of the primary analyses will precede the detailed statistical results. As previously noted, due to the length of this document, the summary is not included for the secondary analyses of the sub-categories and sub-sub-categories of the bladder and bowel domains, but rather just for the primary analyses of the Index PFDI-20 and its three corresponding domains, plus Index PFDI-20(+2) and its five corresponding domains.

Summary of the PFDI-20 Indices

Figure 19. Results of PFDI-20 Indices Over Times 1, 2 and 3, displays the patterns of each of the four PFDI-20 indices (PFDI-20, UDI, CRADI and POPDI) for each of the three groups.

Summary of Index PFDI-20

For the complete PFDI-20 index, all three groups began at basically equal level, at Time 1, with Group A being slightly higher in PFD symptomology than the other two groups. Figure 19 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a dramatic decline in PFD symptom levels while Group C remained fairly unaffected, at Time 3. In fact, the control group noted a minor increase in PFD symptoms between Time 1 and Time 3. Also notable was the fact that Group A showed a slightly greater decrease in PFD symptoms over time, when compared to Group B.

Summary of Index UDI (Domain Bladder Dysfunction of PFDI-20)

For the UDI index (Domain Bladder Dysfunction of the PFDI-20), all three groups began at basically equal level, at Time 1, with Group A being slightly higher in bladder-related PFD symptomology than the other two groups. Figure 19 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a dramatic decline in bladder-related PFD symptom levels while Group C

remained fairly unaffected at Time 3 with, in fact, a slight increase in PFD symptoms noted. Also, Group A showed a slightly greater decrease in bladder dysfunction symptoms over time, when compared to Group B.

Summary of Index CRADI (Domain Bowel Dysfunction of PFDI-20)

For the CRADI index (Domain Bowel Dysfunction of the PFDI-20), all three groups began at basically equal level, at Time 1, with Group C being slightly higher in bowel-related PFD symptomology than the other two groups. Figure 19 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a dramatic and basically equal decline in bowel dysfunction symptom levels (with Group A showing a slightly steeper slope), while Group C remained fairly unaffected at Time 3.

Summary of Index POPDI (Domain POP of PFDI-20)

For the POPDI index (Domain POP of the PFDI-20), all three groups began at basically equal level at Time 1, with Group A being slightly higher in POP-related PFD symptomology than the other two groups. Figure 19 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a dramatic decline in POP symptom levels while Group C remained fairly unaffected at Time 3. In fact, the control group noted a minor increase in POP-related PFD symptoms

between Time 1 and Time 3. Also notable was the fact that Group A showed a greater decrease in POP-related PFD symptoms over time, when compared to Group B.

Summary of the PFDI-20(+2) Indices

Figure 20. Results of PFDI-20(+2) Indices Over Times 1, 2 and 3, displays the patterns of each of the six PFDI-20(+2) indices (PFDI-20(+2), Bladder Dysfunction, Bowel Dysfunction, POP, Pelvic Pain and Sexual Dysfunction) for each of the three groups.

Summary of Index PFDI-20(+2)

For the complete PFDI-20(+2) index, all three groups began at basically equal level of PFD symptomology, at Time 1. Figure 20 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a dramatic, and fairly equal, decline in PFD symptom levels, while Group C remained fairly unaffected at Time 3.

Summary of Index Bladder Dysfunction (of PFDI-20(+2))

For the Bladder Dysfunction index (Domain Bladder Dysfunction of the PFDI-20(+2)), all three groups began at basically equal level at Time 1, with Group A being slightly higher in bladder-related PFD symptomology than the other two groups. Figure 20 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group

A only), Groups A and B noted a dramatic decline in bladder-related PFD symptom levels while Group C noted a slight increase in bladder dysfunction at Time 3. Interestingly, Group A (the 're-education' group) showed a slightly greater decrease in bladder-related PFD symptoms over time, when compared to Group B.

Summary of Index Bowel Dysfunction (of PFDI-20(+2))

For the Bowel Dysfunction index (Domain Bowel Dysfunction of the PFDI-20(+2)), all three groups began at basically equal level at Time 1, with Group C being slightly higher in bowel-related PFD symptomology than the other two groups. Figure 20 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a dramatic and basically equal decline in PFD symptom levels while Group C remained fairly unaffected, at Time 3.

Summary of Index POP (of PFDI-20(+2))

For the POP index (Domain POP of the PFDI-20(+2)), all three groups began at basically equal level at Time 1. Figure 20 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a dramatic decline in PFD symptom levels while Group C remained fairly unaffected at Time 3. In fact, the control group noted a minor increase in POP-related PFD symptoms between Time 1 and Time 3. Also notable was the fact that Group A (the 're-education' group)

showed a greater decrease in POP-related PFD symptoms over time, when compared to Group B.

Summary of Index Pelvic Pain (of PFDI-20(+2))

For the Pelvic Pain index (Domain Pelvic Pain of the PFDI-20(+2)), all three groups began at basically equal level at Time 1. Figure 20 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a dramatic and basically equal decline in pelvic pain symptom levels while Group C remained fairly unaffected at Time 3.

Summary of Index Sexual Dysfunction (of PFDI-20(+2))

For the Sexual Dysfunction index (Domain Sexual Dysfunction of the PFDI-20(+2)), all three groups began at basically equal level at Time 1. Figure 20 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a dramatic and basically equal decline in sexual dysfunction symptom levels, while Group C noted a slight increase in sexual dysfunction symptoms at Time 3. The decrease in sexual dysfunction symptoms for Group B was more dramatic than the decrease in sexual dysfunction symptoms of Group A.

Detailed Results of PFD Symptom Analyses

PFDI-20

With regard to the index PFDI-20, the Time x Group interaction produced highly significant findings of $p<0.001$. Post-hoc Tukey tests were used to compare the differences between Time 1 and Time 3 for each group both intervention groups (Groups A and B) showed highly significant ($p<0.001$) decrease in PFD symptoms when their post-intervention means (Time 3) were compared to their baseline means (Time 1). Group C, the control group, did not significantly differ in Time 1 and Time 3 PFD symptom means (see Table 23. PFDI-20 (Pelvic Floor Distress Inventory): ANOVA, and Figure 19. Results of PFDI-20 Indices Over Times 1 and 3).

The pairs of groups were also compared at Time 1 (baseline) and again at Time 3 (post-intervention). There were no significant differences between any pairs of groups at Time 1 as no intervention had been implemented. However, following the education interventions, when the pairs of groups were compared at Time 3, significant differences were detected. No significant differences were noted between the intervention groups (Groups A and B); however, Group A versus Group C, as well as, Group B versus Group C, noted highly significant findings ($p<0.001$), with the means of Groups A and B being significantly lower than the mean of Group C (see Table 23. PFDI-20 (Pelvic Floor Distress Inventory): ANOVA, and Figure 19. Results of PFDI-20 Indices Over Times 1 and 3).

UDI (Bladder Dysfunction Domain from PFDI-20)

The PFDI-20 was divided into three PFD domains and each was analyzed as independent indices with ANOVA testing and post-hoc Tukey tests for significant differences. With regard to the bladder dysfunction domain of the PFDI-20, or Index UDI, the Time x Group interaction produced a highly significant p-value of $p<0.001$.

Post-hoc Tukey tests were completed to compare the differences between Time 1 to Time 3 for each group. Time 1 versus Time 3 comparisons both showed highly significant decrease for Group A and Group B ($p<0.001$), as their bladder dysfunction symptoms significantly decreased following the pelvic floor health information and PFM exercise sessions. Time 1 versus Time 3 was not significantly different for the control group, Group C (see Table 23a. UDI (Bladder Dysfunction Domain from PFDI-20): ANOVA, and Figure 19. Results of PFDI-20 Indices Over Times 1 and 3).

The groups were also compared at Time 1 and at Time 3. There were no significant differences between any pairs of groups at Time 1; however, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Group A and Group B were not significantly different; however, Group A versus Group C (the control group) noted highly significant differences ($p<0.001$), as did Group B versus Group C ($p<0.01$), with the means of PFD symptoms of Groups A and B being significantly lower than Group C (see Table 23a. UDI (Bladder Dysfunction Domain from PFDI-20): ANOVA, and Figure 19. Results of PFDI-20 Indices Over Times 1 and 3).

CRADI (Bowel Dysfunction Domain from PFDI-20)

Similar to most other indices, the bowel dysfunction domain of the PFDI-20, or Index CRADI, the Time x Group interaction produced significant findings of $p<0.01$. Post-hoc Tukey tests were completed to compare the difference between Time 1 to Time 3 for each group. A significant decrease between Time 1 and Time 3 ($p<0.01$) was observed for both intervention groups, Groups A and B, but not for the control group, Group C (see Table 23b. CRADI (Bowel Domain from PFDI-20): ANOVA, and Figure 19. Results of PFDI-20 Indices Over Times 1 and 3).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. However, following the interventions, both experimental groups (Groups A and B) showed significantly ($p<0.01$) lower means than the control group (Group C). The difference between the two experimental groups, Groups A and B, was not significant (see Table 23b. CRADI (Bowel Domain from PFDI-20): ANOVA, and Figure 19. Results of PFDI-20 Indices Over Times 1 and 3).

POPDI (POP Domain from PFDI-20)

The prolapse domain of the PFDI-20, or Index POPDI, was analyzed using ANOVA and the Time x Group interaction produced highly significant findings of $p<0.001$. Post-hoc Tukey tests were completed to note the differences between Time 1 to Time 3 for each group. Significant decreases were noted between Time 1 to Time 3 for Groups A and B ($p<0.001$ and $p<0.05$, respectively), but not for Group C, the control group (see Table 23c. POPDI (POP Domain from PFDI-20): ANOVA, and Figure 19. Results of PFDI-20 Indices Over Times 1 and 3).

The groups were also compared at Time 1 and then again at Time 3. There were no significant differences between any pairs of groups at Time 1 as no intervention had been implemented. However, following the education and PFM exercise interventions, the two intervention groups (Groups A and B) were not significantly different from each other, but both were significantly lower ($p<0.001$) than the control group, Group C (see Table 23c. POPDI (POP Domain from PFDI-20): ANOVA, and Figure 19. Results of PFDI-20 Indices Over Times 1 and 3).

PFDI-20 Weighted

With regard to the PFDI-20 Weighted index, where each of the 20 items was given equal weight (as opposed to each of the three domains equally weighted as in PFDI-20), the Time x Group interaction again produced the same highly significant findings of $p<0.001$. Post-hoc Tukey tests between Times 1 and 3 were significantly ($p<0.001$) lower for Groups A and B, but not for Group C (see Table 24. PFDI-20 Weighted: ANOVA).

The groups were also compared at Time 1 and at Time 3. There were no significant differences between the groups at Time 1; however, following the interventions, the two experimental groups (Groups A and B) behaved similarly and were significantly ($p<0.001$) lower results than the control group, Group C. The difference between the two experimental groups, Groups A and B, was not significant (see Table 24. PFDI-20 Weighted: ANOVA).

PFDI-20(+2)

With the additional two items evaluating the presence of sexual dysfunction symptoms, the PFDI-20(+2) index was analyzed using ANOVA. In this index, the Time x Group interaction again produced highly significant findings of $p<0.001$. Post-hoc Tukey tests were completed to compare the differences between Time 1 and Time 3 for each group. Both experimental groups, Group A and Group B, produced highly significant ($p<0.001$) decreases in PFD symptom scores between Time 1 and Time 3, whereas Group C, the control group, failed to produce a significant difference between Time 1 and Time 3 (see Table 25. PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1 as no intervention had been implemented. However, following the pelvic health education and PFM exercise interventions, when the pairs of groups were compared at Time 3, significant differences were detected. No significant differences existed between the means of the intervention groups (Group A and B); however, Group A versus Group C, as well as, Group B versus Group C, noted highly significant ($p<0.001$) differences, with the means of Groups A and B being significantly lower than the mean of Group C (see Table 25. PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

Domain Bladder Dysfunction (PFDI-20(+2) Data)

The PFDI-20(+2) was divided into five domains and each was analyzed independently as an index with ANOVA testing and post-hoc Tukey tests for significant

findings. With regard to Domain Bladder Dysfunction of the PFDI-20(+2), the Time x Group interaction of its index produced highly significant findings of $p<0.001$. Post-hoc Tukey tests were completed to compare the difference between Time 1 and Time 3 for each group. Highly significant decreases between Time 1 and Time 3 ($p<0.001$) were observed for the intervention groups (Groups A and B), but not for Group C, the control group (see Table 25a. Domain Bladder Dysfunction from PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1 as the intervention had yet to be implemented. However, following the interventions, both experimental groups (Groups A and B) showed significantly ($p<0.001$) lower means than the control group (Group C). The difference between the two experimental groups (Groups A and B), was not significant (see Table 25a. Domain Bladder Dysfunction from PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

- **Bladder Obstruction**

Domain Bladder Dysfunction of the PFDI-20(+2) was further divided into three sub-categories and analyzed as three separate indices. For the Index Bladder Obstruction, the Time x Group interaction produced a highly significant p-value of $p<0.001$. Post-hoc Tukey tests were completed to compare the differences between Time 1 to Time 3 for each group. A highly significant decrease between Time 1 and Time 3 ($p<0.001$) was observed for Group A; however, interestingly, not for Group B. No significant change for the control group, Group C, was shown (see Table 25a-i. Bladder Obstruction: ANOVA).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. However, following the pelvic floor health education and PFM exercise interventions, both intervention groups (Groups A and B) showed significantly ($p<0.001$ and $p<0.01$, respectively) lower means than the control group, Group C. The difference between Groups A and B, was not significant (see Table 25a-i. Bladder Obstruction: ANOVA).

- **Urinary Frequency**

The second of the three sub-categories of Domain Bladder Dysfunction is Index Urinary Frequency. For this index, the Time x Group interaction produced highly significant findings of $p<0.001$. Post-hoc Tukey tests were completed to compare the differences between Time 1 to Time 3 for each group. A highly significant difference between Time 1 and Time 3 ($p<0.001$) was observed for experimental Group A; however, not for experimental Group B. No significant difference was observed for Group C (see Table 25a-ii. Urinary Frequency: ANOVA).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. Following the interventions (Time 3), one experimental group, Group A, showed significantly ($p<0.001$) lower means than the control group (Group C); however, the other experimental group (Group B), did not. The difference between the two experimental groups was significant ($p<0.05$) for this index, with the mean of Group A lower than the mean of Group B (see Table 25a-ii. Urinary Frequency: ANOVA).

- **Urinary Incontinence**

The third of the three Domain Bladder Dysfunction sub-categories is Index Urinary Incontinence. For this index, the Time x Group interaction again produced highly significant findings of $p<0.001$. Post-hoc Tukey tests were completed to compare Time 1 to Time 3 for each group. Highly significant decreases were noted between Time 1 and Time 3 ($p<0.001$) for both of the intervention groups (Groups A and B), but not for the control group, Group C (see Table 25a-iii. Urinary Incontinence (Stress + Urgency): ANOVA).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1 as no intervention had been implemented. However, following the interventions, both experimental groups showed significantly lower means than the control group, with p-values of $p<0.01$ (Group A versus Group C), and $p<0.05$ (Group B versus Group C). The difference between the intervention groups (Groups A and B) was not significant (see Table 25a-iii. Urinary Incontinence (Stress + Urgency): ANOVA).

i. Stress Urinary Incontinence

The third of three sub-categories for Domain Bladder Dysfunction is Urinary Incontinence. This sub-category was further sub-divided into two sub-sub-categories; Index Stress Urinary Incontinence and Index Urgency Urinary Incontinence. For the Index Stress Urinary Incontinence, the Time x Group interaction produced significant findings of $p<0.05$. Post-hoc Tukey tests were completed to compare Time 1 to Time 3 for each group. A significant decrease between Time 1 and Time 3 ($p<0.05$) was

observed for both intervention groups, Groups A and B, but not for Group C, the control group (see Table 25a-iii-i. Stress Urinary Incontinence: ANOVA).

The groups were also compared at Time 1 and at Time 3. There were no significant differences between any pairs of groups at Time 1. Following the interventions, when the pairs of groups were compared at Time 3, still no significant differences were detected between any pairs of groups (see Table 25a-iii-i. Stress Urinary Incontinence: ANOVA).

ii. Urinary Urgency Incontinence

For the sub-sub-category Urinary Urgency Incontinence, the Time x Group interaction of this index produced significant findings of $p<0.01$. Post-hoc Tukey tests were completed to compare Time 1 to Time 3 for each group. A significant decrease between Time 1 and Time 3 was observed for Group A ($p<0.01$); however, not for Group B or Group C (see Table 25a-iii-ii. Urinary Urgency Incontinence: ANOVA).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. Following the interventions, both experimental groups showed significantly lower means than the control group with $p<0.01$ (Groups A versus C), and $p<0.05$ (Groups B versus C). The difference between the two experimental groups, Groups A and B, was not significant (see Table 25a-iii-ii. Urinary Urgency Incontinence: ANOVA).

Domain Bowel Dysfunction (PFDI-20(+2) Data)

The PFDI-20(+2) was divided into five PFD domains with its second domain related to bowel dysfunction. With regard to Index Bowel Dysfunction of the PFDI-

20(+2), the Time x Group interaction produced a significant p-value of $p<0.01$. Post-hoc Tukey tests were completed to compare Time 1 to Time 3 for each group. A significant decrease between Time 1 and Time 3 ($p<0.01$) was observed for both experimental groups, Groups A and B, but not for the control group, Group C (see Table 25b. Domain Bowel Dysfunction from PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. However, following the pelvic floor health and PFM exercise interventions, both experimental groups, Groups A and B, showed significantly ($p<0.01$) lower means than the control group (Group C). The difference between the two experimental groups (Groups A and B), was not significant (see Table 25b. Domain Bowel Dysfunction from PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

- **Bowel Obstruction**

Domain Bowel Dysfunction of the PFDI-20(+2) was divided into three sub-categories. For the Index Bowel Obstruction, the Time x Group interaction produced a significant difference of $p<0.01$. Post-hoc Tukey tests were completed to compare Time 1 versus Time 3, for each group. A significant decrease between Time 1 to Time 3 ($p<0.01$) was observed for both intervention groups (Groups A and B), but not for Group C (see Table 25b-i. Bowel Obstruction: ANOVA).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. However, following the pelvic floor

health and PFM exercise interventions, both experimental groups, Groups A and B, showed significantly ($p<0.01$) lower means than Group C. The difference between the two experimental groups (Groups A and B) was not significant (see Table 25b-i. Bowel Obstruction: ANOVA).

- **Bowel Urgency**

The second of the three Domain Bowel Dysfunction sub-categories of the PFDI-20(+2) is Bowel Urgency. For the Index Bowel Urgency, the Time x Group interaction again produced a significant difference of $p<0.05$. Post-hoc Tukey tests were completed to compare Time 1 to Time 3 for each group. A significant decrease between Time 1 and Time 3 ($p<0.05$) was observed for both intervention groups, Groups A and B, but not for Group C (see Table 25b-ii. Bowel Urgency: ANOVA).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. However, following the interventions, both experimental groups (Groups A and B) showed significantly ($p<0.05$) lower means than the control group (Group C). The difference between the two experimental groups, Groups A and B, was not significant (see Table 25b-ii. Bowel Urgency: ANOVA).

- **Bowel Incontinence**

The third of the three Domain Bowel Dysfunction sub-categories of the PFDI-20(+2) is Bowel Incontinence. For the Index Bowel Incontinence, the Time x Group interaction produced non-significant findings. As such, no post-hoc Tukey tests were indicated (see Table 25b-iii. Bowel Incontinence (Flatual + Fecal): ANOVA).

i. Flatual Incontinence

The third of the three Domain Bowel Dysfunction sub-categories of the PFDI-20(+2) is Bowel Incontinence. This sub-category was further sub-divided into two sub-sub-categories; Flatual Incontinence and Fecal Incontinence. For the Index Flatual Incontinence, the Time x Group interaction produced non-significant findings. As such, no post-hoc Tukey tests were indicated (see Table 25b-iii-i. Flatual Incontinence: ANOVA).

ii. Fecal Incontinence

For the Index Fecal Incontinence, the Time x Group interaction produced non-significant findings. As such, no post-hoc Tukey tests were indicated (see Table 25b-iii-ii. Fecal Incontinence: ANOVA).

Domain POP (PFDI-20(+2) Data)

The PFDI-20(+2) was divided into five PFD domains with its third domain related to prolapse of the pelvic organs. With regard to Index POP, the Time x Group interaction produced highly significant change of $p<0.001$. Post-hoc Tukey tests were completed to compare Time 1 to Time 3, for each group. A significant decrease between Time 1 and Time 3 was observed for both intervention groups, with p-values of $p<0.001$ (Group A) and $p<0.01$ (Group B), but not for Group C (see Table 25c. Domain POP from PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. However, following the pelvic floor health and PFM exercise interventions, both experimental groups (Group A and Group B) showed significantly ($p<0.001$) lower means than the control group (Group C). The difference between the two experimental groups, Groups A and B, was not significant (see Table 25c. Domain POP from PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

Domain Pelvic Pain (PFDI-20(+2) Data)

The PFDI-20(+2) was divided into five PFD domains with its fourth domain related to pelvic pain. With regard to Index Pelvic Pain of the PFDI-20(+2), the Time x Group interaction produced significant findings of $p<0.01$. Post-hoc Tukey tests were completed to compare Time 1 to Time 3, for each group. A significant decrease between Time 1 versus Time 3 ($p<0.01$) was observed for both intervention groups, Groups A and B, but not for the control group, Group C (see Table 25d. Domain Pelvic Pain from PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. However, following the pelvic floor health and PFM exercise interventions, both experimental groups (Groups A and B) showed significantly ($p<0.01$) lower means than the control group, Group C. The difference between the two experimental groups (Groups A and B), was not significant

(see Table 25d. Domain Pelvic Pain from PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

Domain Sexual Dysfunction (PFDI-20(+2) Data)

The PFDI-20(+2) was divided into five PFD domains with its fifth domain related to symptoms of sexual dysfunction. With regard to Index Sexual Dysfunction of the PFDI-20(+2), the Time x Group interaction produced highly significant differences of $p<0.001$. Post-hoc Tukey tests were completed to compare Time 1 to Time 3, for each group. A highly significant decrease between Time 1 and Time 3 ($p<0.001$) was observed for both intervention groups, Groups A and B, but not for the control group, Group C (see Table 25e. Domain Sexual Dysfunction from PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. However, following the pelvic floor health and PFM exercise interventions, both experimental groups (Groups A and B) showed significantly ($p<0.001$) lower means than the control group, Group C. The difference between the two experimental groups, Groups A and B, was not significant (see Table 25e. Domain Sexual Dysfunction from PFDI-20(+2): ANOVA, and Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3).

PFD-Related QoL Information (PFIQ-7 Data)

The QoL data related to PFD was collected at two times, Time 1 and Time 3, and analyzed using ANOVA and post-hoc Tukey tests when significant p-values resulted. As the group sizes were not identical but very close to equal (Group A n=48, Group B n=48, Group C n=49), the harmonic means were used for n in Tukey post–hoc testing (as per SPSS software) (126). The p-values related to the Time x Group interactions are the notable components of the ANOVA evaluation. The Index PFIQ-7 was analyzed to evaluate the effect of all PFD symptoms on activities of daily living. Following this the three domains of the PFIQ-7 (Index UIQ, Index CRAIQ and Index POPIQ) were analyzed, to individually assess the effect of bladder, bowel and POP symptoms, respectively, on QoL.

Summary of the PFIQ-7 Indices

Figure 21. Results of PFIQ-7 Indices Over Times 1 and 3, displays the patterns of each of the four PFIQ-7 indices (PFIQ-7, UIQ, CRAIQ and POPIQ) for each of the three groups.

Summary of Index PFIQ-7

For the complete PFIQ-7 index, all three groups began at basically equal level of PFD negatively impacting QoL at Time 1. Figure 21 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a

dramatic and equal decline in PFD symptoms negatively affecting QoL while Group C remained fairly unaffected at Time 3.

Summary of Index UIQ (Domain Bladder Dysfunction of the PFIQ-7)

For the UIQ index (Domain Bladder Dysfunction of the PFIQ-7), all three groups began at basically equal level at Time 1. Figure 21 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a dramatic decline in bladder-related PFD symptoms negatively affecting QoL, while Group C showed a slight increase in bladder symptoms having a negative impact on QoL at Time 3.

Summary of Index CRAIQ (Domain Bowel Dysfunction of the PFIQ-7)

For the CRAIQ index (Domain Bowel Dysfunction of the PFIQ-7), all three groups began at basically equal level at Time 1. Figure 21 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B noted a dramatic and basically equal decline in bowel dysfunction impact on QoL, while Group C showed a slight increase in bowel symptoms negatively impacting QoL at Time 3.

Summary of Index POPIQ (Domain POP of the PFIQ-7)

For the POPIQ index (Domain POP of the PFIQ-7), all three groups began at basically equal level at Time 1. Figure 21 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B) and the re-

education intervention (given to Group A only), Groups A and B noted a dramatic decline in POP symptoms negatively impacting QoL, while Group C remained fairly unaffected at Time 3. A notable finding was that Group B showed a greater decrease in POP-related impact on QoL over time, when compared to Group A.

Detailed Results of PFIQ-7 Analyses

Index PFIQ-7 was analyzed using ANOVA and the Time x Group interaction produced significant differences of $p<0.05$. Post-hoc Tukey tests were completed to compare Time 1 to Time 3 for each of the three groups. When Time 1 was compared to Time 3, for Group A, no significant different change was detected. However, when Time 1 was compared to Time 3, for Group B, a significant ($p<0.05$) decrease was noted, as the mean of the impact of PFD on QoL had decreased significantly, following the pelvic floor health and PFM exercise education. Time 1 and Time 3 showed no significant difference for Group C (see Table 26. PFIQ-7: ANOVA, and Figure 21. Results of PFIQ-7 Indices Over Times 1 and 3).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. However, following the pelvic floor health education and PFM exercise interventions, both experimental groups (Groups A and B) showed significantly ($p<0.05$) lower means than the control group (Group C). The difference between the two experimental groups, Groups A and B, was not significant (see Table 26. PFIQ-7: ANOVA, and Figure 21. Results of PFIQ-7 Indices Over Times 1 and 3).

UIQ (Bladder Dysfunction QoL Domain)

The Index UIQ (Domain Bladder Dysfunction of PFIQ-7) was analyzed using ANOVA to determine if the pelvic health education and PFM exercise intervention had a significant impact on the effect of bladder symptoms when performing activities of daily living. The Time x Group interaction of Index UIQ produced significant results of $p<0.05$. Post-hoc Tukey tests were completed to compare Time 1 to Time 3, for each group. When Time 1 was compared to Time 3 no significant differences were produced for any of the three groups (see Table 26a. UIQ (Bladder QoL Domain from PFIQ-7): ANOVA, and Figure 21. Results of PFIQ-7 Indices Over Times 1 and 3).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. Following the education interventions, experimental Group B showed a significantly ($p<0.05$) lower mean than the control group (Group C). The difference between Group A and Group C was not significant and neither was the difference between the two experimental groups, Groups A and B (see Table 26a. UIQ (Bladder QoL Domain from PFIQ-7): ANOVA, and Figure 21. Results of PFIQ-7 Indices Over Times 1 and 3).

CRAIQ (Colorectal Dysfunction QoL Domain)

The CRAIQ domain of PFIQ-7 was analyzed using ANOVA. The Time x Group interaction of Index CRAIQ produced significant findings of $p<0.05$. Post-hoc Tukey tests were completed to compare the Time 1 to Time 3 means of each of the three groups. When Time 1 was compared to Time 3 for each group, no significant differences were

noted (see Table 26b. CRAIQ (Colorectal QoL Domain from PFIQ-7): ANOVA, and Figure 21. Results of PFIQ-7 Indices Over Times 1 and 3).

The groups were also compared at Time 1 and Time 3. There were no significant differences between any pairs of groups at Time 1. Following the education interventions, experimental Group B showed a significantly ($p<0.05$) lower mean than the control group (Group C). The difference between Group A and Group C was not significant and neither was the difference between the two experimental groups, Groups A and B (see Table 26b. CRAIQ (Colorectal QoL Domain from PFIQ-7): ANOVA, and Figure 21. Results of PFIQ-7 Indices Over Times 1 and 3).

POPIQ (POP QoL Domain)

The POPIQ domain of PFIQ-7 was analyzed using ANOVA. The Time x Group interaction of Index POPIQ failed to produce significant findings, and, therefore, post-hoc Tukey testing was not indicated (see Table 26c. POPIQ (POP QoL Domain from PFIQ-7): ANOVA, and Figure 21. Results of PFIQ-7 Indices Over Times 1 and 3).

5 Non-Validated PFD & PFM Exercise Items

The four items (one measuring awareness of PFD symptoms and 3 measuring factors related to PFM exercise) included at Time 1, Time 2 and Time 3, plus the fifth non-validated item (used to track those participants seeking pelvic floor health information independent of the study) added for Time 2 and Time 3 were analyzed

separately using Descriptive Analysis (for categorical data), or ANOVA with post-hoc Tukey tests (for the continuous data that was created into indices known as BIOPFD).

Item 1: Awareness of the Presence of PFD

The first of the five items asked if the participant had PFD. To respond, participants could select 'Yes', 'No' or 'I don't know'. At Time 1, or baseline, participants' awareness to the presence of their own PFD symptoms was extremely low when compared to the results of Index PFDI-20(+2) used to identify the existence of PFD symptoms. This data was analyzed using Descriptive Analysis.

Symptomatic Domains

The responses collected from the Index PFDI-20(+2) allowed identification of all PFD symptoms within the five possible domains (Bladder Dysfunction, Bowel Dysfunction, POP, Pelvic Pain and Sexual Dysfunction).

- **Symptomatic Domains at Time 1 (Baseline of all Participants N=145)**

At Time 1, only six of the 145 (4%) participants had no symptoms of PFD. Of the 145 participants, 13 (9%) had symptoms in only one of the five domains, 22 (15%) had two of five domains symptomatic, 31 (21%) were positive for PFD in three domains, 36 (25%) had symptoms in four of the five PFD domains and 37 (26%) participants had symptoms in all five PFD domains (see Figure 22a. Symptomatic PFD Domains: Compare 3 Groups at Time 1).

When the three groups were compared for the number of PFD symptoms at baseline (Time 1), Group A had three (6%) participants, Group B also had three (6%)

participants, and Group C had zero (0%) participants with no symptoms of PFD ('PFD-free'). The number of participants having a single symptomatic domain was; Group A=3 (6%), Group B=4 (8%) and Group C=6 (12%) participants, two symptomatic domains; Group A=5 (10%), Group B=7 (15%) and Group C=10 (20%), three of five domains symptomatic; Group A=10 (21%), Group B=14 (29%) and Group C=7 (14%), and four of five PFD domains symptomatic was; Group A=14 (29%), Group B=8 (17%) and Group C=14 (29%). And finally, when looking at participants who noted symptoms in all possible PFD domains, Group A=13 (27%), Group B=12 (25%) and Group C=12 (24%). At baseline, the three groups were similarly comprised between numbers of symptomatic PFD domains (see Figure 22a. Symptomatic PFD Domains: Compare 3 Groups at Time 1).

- **Symptomatic Domains at Time 3**

The number of symptomatic domains decreased significantly for the intervention participants (Groups A and B) at Time 3 compared to Time 1. When reviewing symptomatic domains of all study participants (N=145), intervention participants receiving the pelvic floor health and PFM education session(s), plus the control group, 23 (16%) participants (compared to 4% at Time 1) were PFD symptom-free. For those experiencing PFD symptoms in a single domain, at Time 3, 27 (19%) fulfilled this category (compared to 9% at Time 1). Of the 145 participants, 26 (18%) reported symptoms in two domains and 33 (23%) in three domains, at Time 3 (compared to 15% and 21% at Time 1, respectively). At Time 3, 16 (11%) participants noted four dysfunctional PFD domains (compared to 25% at Time 1). The category of all five PFD

domains being dysfunctional was represented by 37 (26%) participants at Time 1, and, this had dropped to 20 (14%) at Time 3 (see Figure 22b. Symptomatic PFD Domains: Compare 3 Groups at Time 3).

The study group of N=145 was separated into Group A (n=48), Group B (n=48) and Group C (n=49) to allow comparison of the number of symptomatic domains for Group A, following two pelvic floor health and PFM exercise education sessions, Group B, experiencing the initial pelvic floor health and PFM exercise education session only, and Group C, the control group who did not receive any education intervention.

At Time 3, Group A=11 (23%) participants (6% at Time 1), Group B=9 (19%) participants (6% at Time 1), and Group C=3 (6%) participants (0% at Time 1) with no symptoms of PFD ('PFD-free'). The number of participants having a single symptomatic domain was; Group A=10 (21%), Group B=10 (21%) and Group C=7 (14%), two symptomatic domains; Group A=9 (19%), Group B=8 (17%) and Group C=9 (18%), three symptomatic domains; Group A=12 (25%), Group B=12 (25%) and Group C=9 (18%), four of five symptomatic PFD domains; Group A=1 (2%), Group B=7 (15%) and Group C=8 16%), and all five domains having symptoms; Group A=5, 10% (27% at Time 1), Group B=2, 4% (25% at Time 1) and Group C=13, 27% (24% at Time 1) (see Figure 22b. Symptomatic PFD Domains: Compare 3 Groups at Time 3).

- **Group A: Time 1 versus Time 3**

For Group A, a dramatic decrease in PFD symptoms was observed from baseline (Time 1), to Time 3. Following the two pelvic floor health and PFM exercise education sessions, while only three (6%) participants were PFD-free at Time 1, this group

expanded to 11 (23%) participants. For those experiencing symptoms in only a single domain, or two domains, the numbers rose from three (6%) to ten (21%), and from five (10%) to nine (19%), respectively. On the other end of the scale, those suffering with four and five symptomatic domains showed tremendous decline as the number of participants in these categories dropped from 14 (29%) to one (2%), and 13 (27%) to five (10%), respectively, when comparing Time 1 to Time 3 symptoms of Group A data (see Figure 23a. Symptomatic PFD Domains of Group A at Time 1 and Time 3).

- **Group B: Time 1 versus Time 3**

A similar response was noted when comparing the number of symptomatic domains of Group B participants, from Time 1 to Time 3 (following the initial pelvic floor health and PFM exercise education session). The number of PFD symptom-free participants rose from three (6%) to nine (19%), and single symptomatic domain participant numbers rose from four (8%) to ten (21%), while the number of participants showing symptoms in all five domains dropped from 12 (25%) to two (4%), when comparing symptomatic domains (see Figure 23b. Symptomatic PFD Domains of Group B at Time 1 and Time 3).

- **Group C: Time 1 versus Time 3**

While tremendous change in the number of symptomatic domains occurred for the intervention participants of Groups A and B, there was little change for participants in the control group, Group C. While the number of PFD-free participants increased from zero to three (6%), a single symptomatic domain varied from six (12%) to seven (14%)

participants, two-symptomatic domains dropped from ten (20%) to nine (18%) participants, and five symptomatic domains changed from 12 (24%) to 13 (27%) participants. There was; however, a notable drop for the number of participants having symptoms in four PFD domains, as at Time 1 there were 14 (29%) participants in this category and only eight (16%) at Time 3 (see Figure 23c. Symptomatic PFD Domains of Group C at Time 1 and 3).

Awareness of the Presence of PFD Symptoms

While the PFDI-20(+2) index measured high prevalence of symptomatic domains within the study groups, this was not reflected in the participants' recognition of PFD symptoms. When asked, "Do you have any pelvic floor dysfunction?" few participants stated 'Yes'. At Time 1, only 6 of 145 female volunteers (4.1%) were 'PFD-free' (displaying zero symptoms of PFD in all five domains) and, therefore, these participants should appropriately select the 'No' response to this question. Of the remaining 139 participants whose PFDI-20(+2) scores identified the presence of PFD, only 20 of the 139 (14.4%) participants with PFD reported 'Yes' to knowing that they had PFD (see Figure 24a. Participants' Awareness to the Presence of PFD at Time 1).

At Time 3, post-intervention, when determining the awareness to the presence of PFD symptoms, consideration must be given to the fact that only 96 of the 145 women in the study (Groups A and B participants) had received the pelvic floor health and PFM exercise education. When Group C (n=49) scores were removed from these numbers (as they had not experienced the education intervention and, therefore, would have no reason to alter their recognition of the presence of PFD), of the 96 pelvic floor health-educated

participants, 20 showed no symptoms of PFD (according to their PFDI-20(+2) responses). This left a possible 76 of the intervention-participants experiencing PFD symptoms. Results showed that 54 of the 76 (71.1%) stated at Time 3, that 'Yes' they had PFD (with two being incorrect responses as, while they had displayed PFD symptoms at Time 1, at Time 3, they were not showing any symptoms). Of the 24 participants stating that they did not have PFD, or that they did not know if they did, 12 currently displayed symptoms in a single domain, four had symptoms in two domains, seven had symptoms in three domains, and one participant had symptoms in all five domains (see Figure 24b. Intervention-Participants' Awareness to the Presence of PFD at Time 3 (Groups A & B Only)).

Items 2-4: PFM Exercise Indices

With regard to the second, third and fourth items, responses were analyzed as individual indices plus combined to create the overall PFM Exercise index, 'PFMtotal'. All four indices were tested using ANOVA, with post-hoc Tukey testing for significant findings. As the group sizes were not identical but very close to equal (Group A n=48, Group B n=48, Group C n=49), the harmonic means were used for n in Tukey post–hoc testing (as per SPSS software) (126).

Item 2 asked participants, "Do you know what pelvic floor muscle exercises (also known as "Kegels") are?" and offered three responses of 'Yes', 'No' and 'I think so'. Item 2 responses were used to determine participants' perceived 'knowledge' levels specific to PFM exercise. Item 3 was used to assess the participants' 'commitment' toward PFM exercise by asking "Do you do pelvic floor muscle exercises ("Kegels")?" followed by the five options of 'Regularly', 'Often', 'Sometimes', 'Rarely' and 'Never'.

Item 4 was used to evaluate the level of 'importance' that participants place on PFM exercise by asking, "Do you think doing pelvic floor exercise ("Kegels") regularly is important for your health?" and offered five responses of "Very important", "Moderately important", "Somewhat important", "Never thought about it" and "Not important".

Summary of the PFM Exercise Indices

Figure 25. Results of PFM Exercise Indices Over Times 1, 2 and 3, displays the patterns of each of the four PFM Exercise indices (PFM Total, PFM Exercise Knowledge, PFM Exercise Importance and PFM Exercise Commitment) for each of the three groups.

- **Summary of Index PFM Total**

For the PFM Total index, knowledge, importance and commitment toward PFM exercise were all included. At Time 1, this index showed the same starting point for all three groups. At Time 2, following the pelvic floor health and PFM exercise education intervention (given to Groups A and B), a dramatic and equal increase was noted for Groups A and B, with no real change evident for Group C. Figure 25 clearly shows that this significant increase continued for Groups A and B (slightly more so for Group A than Group B) between Times 2 and 3, while Group C remained relatively unaffected throughout Times 1, 2 and 3.

- **Summary of PFM Exercise Knowledge Index**

For the PFM Exercise Knowledge index, all three groups began at basically equal level, at Time 1. It is notable that the starting point for knowledge was fairly high for all three groups. Figure 25 clearly shows that following the pelvic floor health and PFM exercise education intervention (given to Groups A and B), Groups A and B noted an equal and dramatic rise in PFM exercise-related knowledge levels while Group C remained fairly unaffected at Time 2. Following the re-education intervention (given to Group A only), no change for Group A or B was noted, as both groups were restricted by a 'ceiling effect' with the maximum score reached at Time 2. Very little change was noted between Times 1, 2 and 3 for Group C.

- **Summary of PFM Exercise Importance Index**

For the PFM Exercise Importance index, all three groups began at basically equal and midpoint level at Time 1. Figure 25 clearly shows that following the pelvic floor health and PFM exercise education intervention given to Groups A and B, these two groups noted a fairly equal and dramatic rise in PFM exercise importance levels, reaching close to maximum levels, while Group C remained unaffected at Time 2. Following the re-education intervention (given to Group A only), only a slight further increase in the importance given to PFM exercise was observed due to a 'ceiling effect' and, therefore, no significant change occurred between Time 2 and Time 3 for this 're-education' group. Interestingly, a slight (but not statistically significant), decrease in importance level was noted for Group B between Time 2 and Time 3. The importance of PFM exercise for

overall health remained fairly constant for the control group (Group C), between Time 1, Time 2 and Time 3.

- **Summary of PFM Exercise Commitment Index**

For the commitment to PFM exercise levels, all three groups started at basically the same low point at Time 1, as seen on Figure 25. Following the pelvic floor health and PFM exercise education intervention (given to Groups A and B), no significant change was noted for any of the three groups at Time 2, as there was not enough time between the education intervention and the second online survey to implement the PFM exercise program presented. However, a dramatic rise was noted for these two groups at Time 3. The slope for Group B was not quite as steep as the slope for Group A, between Times 2 and 3. For Group C, a minor insignificant overall change was noted between Times 1, 2 and 3.

Detailed Results of PFM Exercise Indices

The following details the statistical analyses results of all indices related to PFM exercise; PFM Total, PFM Exercise Knowledge, PFM Exercise Importance and PFM Exercise Commitment.

- **PFM Total Index: PFM Exercise Knowledge + Importance + Commitment**

The Index PFM Total was created by combining the responses of item 2 (PFM Exercise Knowledge) plus item 3 (PFM Exercise Commitment), plus item 4 (PFM Exercise Importance). This index was analyzed using ANOVA to compare the three

groups over Time 1, Time 2 and Time 3. The ANOVA results of the Time x Group interaction showed highly significant differences of $p<0.001$ (see Table 27. PFM Total=Knowledge + Importance + Commitment: ANOVA, and Figure 25. Results of PFM Exercise Indices Over Times 1, 2 and 3).

Each of the three groups was compared using Tukey testing to determine where the significant differences occurred. For Group A, the mean significantly increased ($p<0.001$) from baseline, Time 1, to the mean at Time 2 (following the initial pelvic floor education and PFM exercise session). A further highly significant increase was noted from Time 2 to Time 3 for Group A ($p<0.001$), following the second pelvic floor health and PFM exercise session. Group B also showed a highly significant increase ($p<0.001$) at Time 2. A further significant increase ($p<0.01$) was noted at Time 3. No significant differences were noted for the control group, Group C.

Comparisons of the groups were also made at each of the three times. At Time 1 (before any interaction had taken place), no significant differences were noted between the three groups. At Time 2, no significant differences were found between the two intervention groups, Groups A and B, while both showed significantly higher ($p<0.001$) means than the control group (Group C). At Time 3, still no significant differences were found between the two intervention groups (Groups A and B), while both again showed a significantly higher ($p<0.001$) means than Group C.

- **Item 2: PFM Exercise Knowledge Index**

Item 2 assessed the 'knowledge' level of participants specific to PFM exercise. This index was analyzed using ANOVA testing to compare the three groups over Time 1,

Time 2 and Time 3. The ANOVA results of the Time x Group interaction showed significant differences of $p<0.01$ (see Table 27a. PFM Exercise Knowledge: ANOVA, and Figure 25. Results of PFM Exercise Indices Over Times 1, 2 and 3).

Each of the three groups was compared using Tukey testing to determine where the significant differences occurred. For Group A, the mean significantly increased ($p<0.05$) from baseline, Time 1, to the mean at Time 2 (following the initial pelvic floor education and PFM exercise session); however, no significant difference was noted from Time 2 to Time 3 for Group A, following the second pelvic floor health and PFM exercise session. Group B also showed a significant increase ($p<0.001$) at Time 2; however, like its experimental group partner (Group A) did not produce a significant difference at Time 3. No significant differences were noted for the control group, Group C.

Comparisons of the groups were also made at each of the three times. As expected, at Time 1 (before any interaction had taken place), no significant differences were noted between the three groups. At Time 2, no significant differences were found between the two intervention groups, Groups A and B, and only Group B observed a significantly higher ($p<0.05$) mean than the control group (Group C). At Time 3, no significant differences were found between any groups.

- **Item 3: PFM Exercise Commitment Index**

Item 3 assessed the 'commitment' level of participants specific to PFM exercise performance. This index was analyzed using ANOVA testing to compare the three groups over Time 1, Time 2 and Time 3. The ANOVA results of the Time x Group

interaction showed highly significant differences of $p<0.001$ (see Table 27b. PFM Exercise Commitment: ANOVA, and Figure 25. Results of PFM Exercise Indices Over Times 1, 2 and 3).

Each of the three groups was compared using Tukey testing to determine where the significant differences occurred. For Group A, while no significant difference was observed from baseline, Time 1, to the mean at Time 2 (following the initial pelvic floor education and PFM exercise session), a highly significant increase was noted from Time 2 to Time 3 for Group A ($p<0.001$), following the second pelvic floor health and PFM exercise session. Group B also showed no significant difference at Time 2, followed by a highly significant increase ($p<0.001$) at Time 3. No significant differences were noted for the control group, Group C.

Comparisons of the groups were also made at each of the three times. At Time 1 (before any interaction had taken place), no significant differences were noted between the three groups. At Time 2, again no significant differences were observed between the three groups. At Time 3, no significant differences were found between the two intervention groups (Groups A and B), while both showed significantly higher ($p<0.001$) means than the control group (Group C).

- **Item 4: PFM Exercise Importance Index**

Item 4 assessed the 'importance' that participants placed on PFM exercise to their overall health. This index was analyzed using ANOVA testing to compare the three groups over Time 1, Time 2 and Time 3. The ANOVA results of the Time x Group interaction showed highly significant differences of $p<0.001$ (see Table 27c. PFM

Exercise Importance: ANOVA, and Figure 25. Results of PFM Exercise Indices Over Times 1, 2 and 3).

Each of the three groups was compared using Tukey testing to determine where the significant differences occurred. For Group A, the mean significantly increased ($p<0.001$) from baseline, Time 1, to the mean at Time 2 (following the initial pelvic floor education and PFM exercise session); however, no significant difference was noted from Time 2 to Time 3, following the second pelvic floor health and PFM exercise session. Group B also showed a highly significant increase ($p<0.001$) at Time 2 (from baseline) and no significant change noted at Time 3. As expected, no significant differences were noted for the control group, Group C.

Comparisons of the groups were also made at each of the three times. At Time 1 (before any interaction had taken place), no significant differences were noted between the three groups. At Time 2, no significant differences were found between the two intervention groups, Groups A and B, while both showed significantly higher ($p<0.001$) means than the control group (Group C). At Time 3, still no significant differences were found between the two intervention groups (Groups A and B), while both again showed significantly higher ($p<0.001$) means than the control group (Group C).

Item 5: Sought Pelvic Floor Health Information

The final item was included only for Surveys 2 and 3 and asked participants, "Have you sought any additional pelvic floor health information since our last survey?", with "Yes" or "No" responses offered. The data from this item was collected from all participants but most relevant for the Group C participants as the study was based on the

assumption that they would not be receiving any pelvic floor health related information but could not prevent participants from seeking information on their own. In this way, if Group C participants had sought information, data from this respondent could be identified for evaluation to determine whether or not this impacted their responses to the PIKQ questions. Survey results identified similar numbers of participants sought pelvic health information in each of the three groups, with a total of eight participants in Group A, 11 in Group B and eight participants of Group C.

Impact of Pelvic Health Information Seeking for Group C

In total, eight of the 49 Group C participants noted "Yes" they had sought pelvic health information independently; two at Time 2 and six additional participants at Time 3. This data was analyzed using Descriptive Analysis.

Scores for the 24 PIKQ items were totalled and averaged to be used for determination of what, if any, differences appeared in the scores of the eight 'information-seekers compared' to the 41 Group C members that selected "No" when asked if they had sought pelvic floor health information, at Time 2 and Time 3 (see Table 28. Seeking Information Effect on Group C PIKQ).

For all 49 participants in Group C, the PIKQ average score dropped from 43.37 to 41.67 from Time 1 to Time 2 (Difference= -1.70 from Time 1 to Time 2), but then increased to 48.72 at Time 3 (Difference= +5.35 from Time 1 to Time 3).

When reviewing the data for the 41 of 49 participants reporting no information-seeking behaviour, the average score was 42.48 at Time 1, dropped to 40.55 at Time 2

(Difference= -1.93 from Time 1 to Time 2), and then increased to 46.85 at Time 3 (Difference= +4.37 from Time 1 to Time 3).

For the eight participants who reported that they had sought information, the Time 1 mean score was higher than the scores for the 41 'non-seekers', at 47.91, showed less drop compared to the 'non-seekers' at Time 2 with a score of 47.40 (Difference= -0.51 from Time 1 to Time 2) and then showed a greater increase compared to the 'non-seekers' with a final score of 58.33 at Time 3 (Difference= +10.42 from Time 1 to Time 3).

While the PIKQ scores of the eight information-seeking participants showed an average increase of 10.42 from Time 1 to Time 3, compared to the increase of 4.37 for the 41 non-information seeking participants, the results of the non-parametric and ANOVA tests showed no significant impact to the overall PIKQ scores for Group C.

ANOVA Summary

To note which ANOVA findings produced significant results and which did not, Table 29. ANOVA Summary was generated. This table allows easy reference showing the significance level of each of the indices (BIOPFD) following the interventions. All significant results appear on grey background whereas non-significant findings are noted with a white background.

All indices related to pelvic floor knowledge acquisition, the PIKQ, PIKQ-Incontinence and PIKQ-POP all resulted in highly significant p-values of $p<0.001$.

The PFD symptom related indices, the PFDI-20, PFDI-20 Weighted, and the PFDI-20(+2) analysis all produced highly significant results with $p<0.001$.

For the PFDI-20 domains, Index UDI (Domain Bladder Dysfunction) and Index POPDI (Domain POP) showed high significance with $p<0.001$. The third domain, Index CRADI (Domain Bowel Dysfunction) resulted in significant findings with a p-value of $p<0.01$.

When the PFDI-20(+2) was analyzed according to its five PFD domains, indices for Bladder Dysfunction, POP and Sexual Dysfunction all resulted in highly significant p-values of $p<0.001$, while indices for Bowel Dysfunction and Pelvic Pain resulted in significant p-values of $p<0.01$.

When the Domain Bladder Dysfunction was subdivided into three sub-categories, all three indices (Bladder Obstruction, Urinary Frequency and Urinary Incontinence) produced highly significant p-values of $p<0.001$. For the Urinary Incontinence sub-sub-categories, Index Stress Urinary Incontinence showed significance of $p<0.05$, and Index Urgency Urinary Incontinence showed significance of $p<0.01$.

When the Domain Bowel Dysfunction was subdivided into three sub-categories, two of the three produced significant results. Index Bowel Obstruction showed significance with $p<0.01$ and Index Bowel Urgency produced significant difference of $p<0.05$. The Index Bowel Incontinence; however, did not produce significant results, and neither did its sub-sub-categories; Index Flatual Incontinence and Index Fecal Incontinence.

When analyzing the findings related to QoL affected by PFD symptoms, the Index PFIQ-7 resulted in significant difference of $p<0.05$, as did two of its three domains.

While Index UIQ (QoL related to Domain Bladder Dysfunction) and Index CRAIQ (QoL related to Domain Bowel Dysfunction) produced p-values of $p<0.05$, Index POPIQ (QoL related to Domain POP) failed to show significant results.

With regard to the PFM Exercise indices, Index PFM Total produced highly significant results of $p<0.001$, as did Index PFM Exercise Importance, and, Index PFM Exercise Commitment. Index PFM Exercise Knowledge produced significant differences of $p<0.01$.

DISCUSSION

The results of this study produced numerous significant findings that stand to benefit both the field of female pelvic floor medicine and the field of public health for women. This Discussion chapter details the points worthy of reflection.

Demographic Information

When comparing groups of individuals, it is important that these groups are essentially similar in all aspects that may confound the outcome. All inclusion and exclusion criteria were standard to all participants and, therefore, the groups should be homogeneous. Although the analyses of the demographics of the participants showed no significant difference between the three groups in any of the 15 variables collected, it is important to demonstrate a high degree of homogeneity among the groups that would otherwise affect the results. The Chi Square analyses yielded Type II probability values for each of the 15 demographic variables ranging between p=0.108 for 'Education', to p=0.995 for 'Age' (see Table 17. Demographics of Participants).

The lowest probability (p=0.108) was observed for the education variable. This is the result of an incongruity noted within the 'University Graduate Degree' category with Group B showing 10 participants having graduate degrees while Groups A and C had only one and four, respectively. This finding may raise suspicion that some of the participants misinterpreted the categories of 'University Under-Graduate Degree' and 'University Graduate Degree' but is not likely to affect the other responses to the

questionnaires. For all practical purposes, the computerized random number allocation process was believed to be successful in producing three similar groups.

Pelvic Floor Health Knowledge Information (PIKQ Data)

The pelvic floor health knowledge information produced highly significant results when analyzed using non-parametric methods, as well as with ANOVA. These significant results ($p<0.001$) were noted when the PIKQ data was analyzed as a complete entity (all 24 items). At Time 1, as expected, the three groups were not statistically different. At Time 2, following the pelvic floor health education and PFM exercise session (given to Groups A and B), the means of the experimental groups, Groups A and B, had significantly increased compared to its Time 1 mean ($p<0.001$). No difference was noted in the means of the control group, Group C, from Time 2 compared to Time 1. At Time 3, following the second pelvic floor health education and PFM exercise session given to Group A only, a further highly significant increase in mean was noted for Group A ($p<0.001$). No significant difference in mean was produced by Group B or Group C between Time 2 and Time 3.

These dramatic results support the hypothesis that there would be a significant increase in pelvic floor health knowledge base following the education session, and furthermore, that there would be a significant benefit to reinforcing this education.

While the analysis of the PIKQ data produced highly significant results, exactly as expected, some interesting variations were noted when the 24-item PIKQ was divided into 12 items related to incontinence knowledge and 12 items related to the prolapsing of

pelvic organs, and the domains PIKQ-Incontinence and PIKQ-POP were separately analyzed. The following details the few variations noted between the non-parametric and ANOVA analyses of the PIKQ data as well as the clinically interesting findings observed when dividing the PIKQ into its separate domains.

PIKQ Results: Non-Parametric Analysis

The PIKQ (24 items), PIKQ-Incontinence (12 of the 24 items related to incontinence) and PIKQ-POP (12 of the 24 items related to prolapsing of pelvic organs), when analyzed using non-parametric methods, produced the same highly significant $p<0.001$ results, when using Kruskal-Wallis tests to compare Groups A, B and C at Time 2 and again at Time 3. At Time 2, the post-hoc Mann-Whitney U tests identified significant differences between Groups A and C ($p<0.001$), with the mean of Group A knowledge being significantly higher than that of Group C, and also between Groups B and C ($p<0.001$), with the mean for Group B knowledge being significantly higher than that of the control group. These same highly significant results were detected for PIKQ, PIKQ-Incontinence and PIKQ-POP data. For all three groupings, there was no significant difference between Group A and B at Time 2 as they had received the same pelvic floor health education session (see Table 19. PIKQ Results: Non-Parametric Testing, Table 19a. PIKQ-Incontinence Results: Non-Parametric Testing, and Table 19b. PIKQ-POP Results: Non-Parametric Testing).

At Time 3, all three analyses (PIKQ, PIKQ-Incontinence and PIKQ-POP) using Kruskal-Wallis test resulted in a highly significant p-value of $p<0.001$. At Time 3, post-hoc Mann-Whitney U tests found significant differences with $p<0.001$ for all possible pairs of groups (with the means of Groups A and B both being significantly higher than

the mean of Group C), including the comparison of the intervention groups, Groups A and B, with the mean of Group A being significantly greater than the mean of Group B, supporting the benefit of a 're-education' variable.

The only difference noted between the PIKQ, PIKQ-Incontinence and PIKQ-POP data was detected with Wilcoxon Signed Rank tests comparing the study group as a whole (N=145), over time. All three data comparisons (PIKQ, PIKQ-Incontinence and PIKQ-POP) for Time 1 versus Time 2, and, Time 1 versus Time 3, resulted in highly significant findings with $p<0.001$. The exception was noted on the Wilcoxon Signed Rank test comparing Time 2 and Time 3. While the complete 24 items of the PIKQ tool and the 12 PIKQ-POP items both resulted in significant p-values of $p<0.001$ (with Time 3 being significantly higher than Time 2), the 12 PIKQ-Incontinence items when compared from Time 2 and Time 3, produced a non-significant $p=0.362$ (see Table 19. PIKQ Results: Non-Parametric Testing, Table 19a. PIKQ-Incontinence Results: Non-Parametric Testing, and Table 19b. PIKQ-POP Results: Non-Parametric Testing).

This suggests that while the re-education component produced significant findings when Groups A (n=48) and B (n=48) were contrasted via Mann-Whitney U testing, when the control group was included in the comparison and all participants were evaluated as a group over time (N=145), the re-education did not impact as greatly for the 12 incontinence-related items as it did for the 12 POP-related items. However, since the Wilcoxon Signed Rank test compares all participants of the study including the controls, this non-significant finding should not overshadow the highly significant results of $p<0.001$ when directly comparing the mean of Group A to the mean of Group B at Time

3 with Mann-Whitney U testing, supporting the benefit of the second intervention, the 're-education' variable.

PIKQ Results: ANOVA Analysis

The same PIKQ data was analyzed using ANOVA tests followed by post-hoc Tukey testing for significant findings. As with the non-parametric analysis, the ANOVA Time x Group interactions for PIKQ, PIKQ-Incontinence and PIKQ-POP data, all produced highly significant p-values of $p<0.001$.

PIKQ (24 Items)

For the PIKQ index, while the mean of Group A continuously rose and showed $p<0.001$ significance when compared for all pairs of times (Time 1 versus Time 2, Time 1 versus Time 3, and Time 2 versus Time 3), Group B produced a significant increase from Time 1 to Time 2 ($p<0.001$), but failed to produce further significant increase when compared from Time 2 to Time 3. As expected, no significant change was noted for the control group over the three times.

These results are equal to those produced via non-parametric methods and support the benefit of the second intervention, the 're-education' variable. Furthermore, while no significant difference was found when the means of Groups A and B were compared at Time 2, comparison at Time 3 resulted in significant difference with $p<0.05$, as the mean of Group A was significantly higher than the mean of Group B. This p-value of $p<0.05$ produced by post-hoc Tukey testing was comparable to the Mann-Whitney U test p-value of $p<0.001$ for Group A versus Group B at Time 3 (see Table 20. PIKQ Results: ANOVA, and Figure 18. Results of PIKQ Indices Over Times 1, 2 and 3).

- **PIKQ-Incontinence (12 Items)**

When reviewing the ANOVA and Tukey analysis of the PIKQ-Incontinence data, the findings were again the same as those of the non-parametric tests. An interesting point from the Tukey analysis of Index PIKQ-Incontinence was that the Time 2 to Time 3 comparison for Group A failed to show significance (see Table 20a. PIKQ-Incontinence Results: ANOVA, and Figure 18. Results of PIKQ Indices Over Times 1, 2 and 3).

While these findings superficially appear to indicate that the 're-education' variable was not significantly beneficial for pelvic floor health related to incontinence, upon further examination of the results, it was determined that this would not be an accurate deduction. The lack of significant change within the PIKQ-Incontinence data between Time 2 and Time 3 may be explained by a 'ceiling effect' of knowledge-acquisition since there is a maximum number of items that may be correctly answered. The mean of Group A at Time 1 equalled 55.56 out of a possible 100 and then increased significantly, at Time 2, to 96.53. While the mean continued to rise for Group A following the second education intervention (whereas a decrease was noted for Group B), this increase was limited by the maximum correct responses possible. At Time 3, the mean equalled 98.96, very close to its maximum of 100 (see Table 20a. PIKQ-Incontinence Results: ANOVA).

This noted, when comparing the mean of Group A (having had both the first and the second education sessions) to the mean of Group B (having only had the first education session) at Time 3, the highly significant p-value of $p<0.001$ supports the importance of the 're-education' component of the study. In fact, when Group A was

directly compared to Group B using the PIKQ data, the PIKQ-Incontinence data, and the PIKQ-POP highly significant results were produced ($p<0.001$) with the use of non-parametric Kruskal-Wallis and post-hoc Mann-Whitney U tests, and again with ANOVA and post-hoc Tukey tests. These findings support the overall importance and significant benefit of re-education specific to pelvic floor health education and PFM exercise, regardless of the single Tukey outcome for Index PIKQ-Incontinence failing to show significance as it was hampered by a 'ceiling effect'.

Furthermore, to glean clinically relevant information from the finding that Index PIKQ-Incontinence was not significantly increased between Time 2 and Time 3 for Group A, while Index PIKQ-POP produced a highly significant increase ($p<0.001$) in mean for Group A at Time 3 compared to Time 2, suggests that perhaps the incontinence-related information is more fully learned and retained in contrast to the POP-related knowledge. Further research would be necessary to confirm this suggestion.

- **PIKQ-POP (12 Items)**

With regard to the PIKQ-POP ANOVA result, a significantly high p-value of $p<0.001$ was produced. Post-hoc Tukey tests produced highly significant p-values of $p<0.001$, for all pair comparisons with the exception of $p<0.05$ for Group A versus B at Time 3. For this comparison, a significant difference of $p<0.05$ was determined on Tukey testing which was comparable, but not equal, to the corresponding Mann-Whitney U test producing p-values of $p<0.001$ for all comparisons (see Table 20b. PIKQ-POP Results: ANOVA).

There were two additional noteworthy findings on the PIKQ-POP results. Firstly, Group B noted highly significant differences when compared between Time 2 and Time 3 ($p<0.001$) with the mean continuing to rise despite the fact that Group B did not participate in the second education intervention. Secondly, Group C, also showed significant results ($p<0.05$), with an increase in mean from Time 2 to Time 3, when, as the control group, they had not participated in either of the two education interventions. These findings suggest that additional pelvic floor health information regarding POP was sought by participants independent of the research study, as they became aware that prolapse of the pelvic organs was possible.

Minor Variations in P-values Between Mann-Whitney U and Tukey Post-Hoc Tests

When post-hoc Tukey tests were used, most results were equal in p-value to those noted on Mann-Whitney U testing, i.e. when Mann-Whitney U tests produced comparisons with no significant differences, these same comparisons with Tukey testing produced non-significant results, and when Mann-Whitney U produced p-values of $p<0.001$, so did the Tukey analysis. However, on a few occasions, the p-value produced by the Tukey test, while still significant, was not quite as low as the p-value produced by the corresponding Mann-Whitney test.

The basis of Tukey's Honestly Significant Difference test is to raise the critical value threshold when determining significant difference for multiple pair comparisons (126). This increase in critical value when using Tukey analysis may explain the slight variation in a few post-hoc p-values, as the non-parametric tests do not have the safety check that Tukey's incorporates for preventing overstatement of results.

A further possible explanation for the slight differences noted in p-value may be the fact that Tukey tests rely on an error pooled from all participants while Mann-Whitney U tests rely on the error of only the two groups being compared.

Regardless of why the minor variations in p-values resulted they are not significant as overall, the numerous non-parametric and Tukey post-hoc tests produced comparable, and most often identical, results when comparing the pelvic floor health knowledge of the three groups over three times.

PFD Symptom Information (PFDI-20 & PFDI-20(+2) Data)

The PFD symptom information produced highly significant results when analyzed, with p-values of $p<0.001$ noted for all indices of the complete assessment tools (PFDI-20, PFDI-20 Weighted and PFDI-20(+2)). Highly significant p-values, ranging from $p<0.01$ to $p<0.001$, were again produced when analyzing the individual domains of the objective measuring tool (three PFD domains in PFDI-20, five PFD domains in PFDI-20(+2)). In each index, the groups receiving the education session(s) (Groups A and B) showed a significant decrease in PFD symptoms following the pelvic floor health and PFM exercise session, while no significant change was observed for the control group. These dramatic results clearly support the hypothesis that there would be a significant decrease in PFD symptoms following the pelvic floor health education session and implementation of PFM exercise and healthy dietary and toileting strategies.

Possible Understatement of PFD Symptoms at Time 1

It is the basis of this research study that raising awareness to the presence of PFD symptoms will lead to participants' recognition of the presence of previously undetected dysfunctions, rather than the belief that fictitious, or non-existent, problems exist. Since some participants may require time to recognize and accept the presence of PFD symptoms, their responses may reflect an element of denial of their existence. In this study, this may have led to a slight decrease, or understatement, of PFD symptoms on baseline testing, at Time 1. That noted, if this occurred and PFD symptoms were minimized, it would effectively make it more difficult to note significant difference in PFD symptom reduction at Time 3 compared to Time 1, and would not inflate the significance of the results noted.

Comparison of PFDI-20, PFDI-20 Weighted & PFDI-20(+2) Results

The data collected from the previously validated PFDI-20 objective measuring tool was analyzed following the method outlined by the creators of this device. Following this, the same data was analyzed using equal weighting of the same 20 items, rather than the simple averaging of the three domains, as the creators directed. This was followed by the analysis of the same 20 items plus the two sexual dysfunction items added to create the PFDI-20(+2), which weighted each of the 22 items equally. Because two items were added to a previously validated tool, it was important to analyze the results of the original 20 items strictly following the creators' protocol, and then compare these results to those of the newly created 22-item tool.

The analysis of all three data sets of PFD symptomology produced equal results, i.e. the ANOVA analysis for PFDI-20, PFDI-20 Weighted, and PFDI-20(+2) data, all produced the same results with p-values highly significant at $p<0.001$ (see Table 23. PFDI-20 (Pelvic Floor Distress Inventory): ANOVA, Table 24. PFDI-20 Weighted: ANOVA, and Table 25. PFDI-20(+2): ANOVA).

Comparison of the Five PFD Domains Within the PFDI-20(+2)

The PFDI-20(+2) data collected (to determined the overall presence of PFD symptoms) was separated into five individual PFD domains. It is interesting to note that while all domains showed significant improvement in PFD symptoms, some organs responded more dramatically than others. The domains Bladder Dysfunction, POP and Sexual Dysfunction produced highly significant p-values of $p<0.001$, while domains Bowel Dysfunction and Pelvic Pain produced significant findings with slightly less significant p-values of $p<0.01$. It is possible the pelvic health education session offered information that, while addressing toileting habits for both bladder and bowel function, had greater impact on bladder dysfunction compared to bowel dysfunction. Another consideration is that perhaps PFM exercise results in improvement to pelvic support, bladder and sexual function at differing rates compared to its effect on bowel function and pelvic pain. This study did not address these factors; however, future research in this area stands to provide important information to the clinical care for patients suffering with these forms of PFD.

Furthermore, for Domain Bladder Dysfunction and Domain Bowel Dysfunction, each of the respective three sub-categories and two sub-sub-categories were analyzed.

For all five bladder dysfunction-related variables, significant findings were produced. For the five bowel dysfunction-related variables; however, while Bowel Obstruction ($p<0.01$) and Bowel Urgency ($p<0.05$) both produced significant findings, the third sub-category, Bowel Incontinence, as well as its two corresponding sub-sub-categories (Flatual Incontinence and Fecal Incontinence) failed to produce significant findings. Regardless of the fact that some subdivisions within the Domain Bowel Dysfunction failed to produce significant decrease from baseline to Time 3, the domain as a whole was successful ($p<0.01$). Clearly, bowel function benefitted greatly from the PFM exercise and pelvic health strategies. It is a consideration that bowel incontinence symptoms require longer time periods of PFM exercise for significant improvement to be detected, compared to other forms of PFD. Further research would be needed to determine if this in fact is so and what clinical relevance and implications would result.

The highly significant reduction of PFD symptoms (of the experimental groups) produced within this study occurred over a relatively short period of time (approximately two months). Further research would be necessary to determine if individual domains respond at differing rates, as well as, how long the effects of education and re-education are maintained.

PFD-Related QoL Information (PFIQ-7 Data)

The negative impact that PFD symptoms had on routine activities of daily living decreased dramatically following the pelvic floor health education and PFM exercise program. It is interesting to note that, while the PFD-related QoL results showed

significant findings, the effect on QoL was not as highly significant as the p-values related to the reduction in PFD symptoms or the increase in pelvic floor knowledge acquisition, following the intervention(s). The PFD-related QoL data produced a significant Time x Group interaction ANOVA p-value of $p<0.05$, while the corresponding p-values for PFD symptoms and pelvic floor knowledge variables both resulted in highly significant p-values of $p<0.001$.

Furthermore, the post-hoc Tukey tests for the QoL data showed significant results for Time 3 comparisons of the means of Group A versus Group C resulting in $p<0.05$ (with the QoL of Group A being significantly less negatively affected because of PFD symptoms compared to the control group), and Group B versus Group C resulting in $p<0.05$ (with the QoL of Group B having significantly less difficulty during activities of daily living due to PFD symptoms compared to the control group). However, only Group B showed significant decrease in their difficulties with activities of daily living when compared from Time 1 to Time 3 ($p<0.05$), as Group A fell just short of producing a significant difference from Time 1 to Time 3. Also, when the PFIQ-7 data was broken down into its three domains, only two of the three domains produced significant results. While the bladder dysfunction domain (UIQ) and bowel dysfunction domain (CRAIQ) both noted significant decrease in the negative impact these respective organs had on QoL ($p<0.05$ for both domains), the QoL analysis related to the POP domain fell slightly short of producing a significant difference from Time 1 to Time 3.

This somewhat less dramatic result of the QoL data, compared to the highly significant differences noted for the reduction in PFD symptoms and the increase in pelvic floor knowledge acquisition, may be explained by the relatively low complaints of

QoL issues related to PFD at baseline testing (Time 1). As noted in non-validated item 1, Time 1, only 14.4% of the participants experiencing symptoms of PFD responded 'Yes' when asked if they had PFD. Perhaps the lack of awareness to these PFD symptoms led to less recognition of the impact these symptoms were having on QoL and daily activities. It is possible that the questions asked on the baseline survey increased participants' awareness to their PFD symptoms and the corresponding impact on activities of daily living and, therefore, QoL actually worsened at Time 3. This was actually witnessed in the control group as their mean scores of QoL showed a slight, but not significant, increase in mean score at Time 3 compared to Time 1. Furthermore, it is possible that a research period longer than two months may have allowed for more impact to be noted in QoL. That stated, the QoL index did produce a significant reduction in the negative impact that PFD symptoms were having on QoL.

5 Non-Validated PFD & PFM Exercise Items

Several interesting findings were noted from the responses to the four items (re: awareness to PFD symptoms, PFM exercise knowledge, importance of PFM exercise in overall health, and commitment toward PFM exercise) included on all three online surveys, plus the fifth item (re: seeking pelvic health information independent of the study) included on surveys two and three.

It was expected that there would be no change, between Time 1 and Time 3, in the personal views of the participants within the control group toward identification of the presence of PFD symptoms and the knowledge, importance, and commitment concerning

PFM exercise. It was anticipated that an increase in these responses would be identified in both of the experimental groups, A and B. This was, in fact, the result of the study as highly significant improvements were noted for Groups A and B regarding their increased recognition of PFD symptoms, as well as increased personal knowledge regarding PFM exercise, increased belief in the importance of PFM exercise to their overall health, and finally, increased personal commitment toward routine PFM exercise.

Item 1: Awareness of the Presence of PFD

With the evaluation of the awareness to the presence of PFD symptoms, it is important to note the high prevalence of PFD, the high prevalence of co-occurring PFD (symptoms in multiple PFD domains), matched with low levels of PFD recognition. When reviewing the complete group of participants (N=145) at Time 1 and evaluating the number of PFD domains that were symptomatic (based on PFDI-20(+2) responses), only 4% of the women were symptom-free in all of the five possible PFD domains of Bladder Dysfunction, Bowel Dysfunction, POP, Pelvic Pain and Sexual Dysfunction. There were 13 participants (9.0%) who were symptomatic in a single domain, 22 (15.2%) displaying symptoms in two domains, 31 (21.4%) had three symptomatic domains, 36 (24.8%) in four domains, and 25.5% of the women studied, displayed PFD symptoms in all five domains (see Figure 22a. Symptomatic PFD Domains: Compare 3 Groups at Time 1).

While the finding that 126 of the 145 (86.9%) of the volunteering female office employees had co-occurring PFD (in two or more domains), and that 104 of these 145 (71.7%) volunteering females experienced PFD symptoms in three or more domains is surprising, the fact that only 20 of the 139 (14.4%) of the symptomatic participants

answered ‘Yes’ when asked if they had PFD is astounding (see Figure 24a. Participants’ Awareness to the Presence of PFD at Time 1).

Of the 12 women who had symptoms in a single domain, none stated ‘Yes’ to having PFD. Of the 22 participants with two PFD dysfunctions, only three (13.6%) responded ‘Yes’, of the 31 women with three domains affected, five (16.1%) stated that they had PFD, of the 36 women with four symptomatic domains, eight (22.2%) noted the presence of PFD, and of the 37 participants displaying PFD in all five possible domains, only four (10.8%) stated that ‘Yes’, they had PFD.

This supports the foundation of this research that while the prevalence of PFD is high within females in society, and that the existence of co-occurrence of PFD is disturbingly high, this is matched with the alarmingly low awareness to the presence of these PFD symptoms.

For the 96 of 145 participants who received the education intervention of the research study (participants in Groups A and B), the number of PFD symptom-free participants increased from six of 96 (6.3%) at Time 1, to 20 of 96 (20.8%) at Time 3. On the other extreme for the 25 of 96 (26.0%) of intervention-participants suffering with symptoms in all five PFD domains at Time 1, a dramatic reduction to seven of 96 (7.3%) displayed five symptomatic domains at Time 3, following the pelvic floor health and PFM exercise education intervention(s). This highly significant decrease, and even resolution for many participants, of PFD symptoms transpired following one or two education presentations. Many participants simply required an increase in awareness to the importance of pelvic floor health and PFM function, and to be given healthy bladder and bowel strategies combined with proper PFM exercise instruction. Furthermore, these

possibly life-altering improvements were noted in a relatively short period of time (approximately 2 months).

The education sessions resulted in a highly significant decrease in PFD symptoms and also produced a very dramatic rise in awareness of the presence of one's own PFD symptoms. Of the 96 pelvic floor health-educated participants (Groups A and B), 20 no longer had symptoms of PFD according to their PFDI-20(+2) responses. This left a possible 76 of the intervention-participants still experiencing PFD symptoms. Results showed that at Time 3, 54 of the 76 (71.1%) stated 'Yes' they experienced PFD compared to the Time 1 baseline data when only 20 of the 139 (14.4%) of the symptomatic participants responded 'Yes' to experiencing PFD (see Figure 24a. Participants' Awareness to the Presence of PFD at Time 1, and Figure 24b. Intervention-Participants' Awareness to the Presence of PFD at Time 3 (Groups A & B only)).

These findings further support the hypothesis that building awareness and knowledge regarding pelvic floor health has an important impact on the identification of one's own PFD; a factor necessary in order to correct PFD. The identification of one's PFD symptoms is crucial to encourage the necessary behavioural modifications, implementation of healthy dietary and PFM exercise strategies, and in seeking appropriate medical interventions for improvement and possible resolution of PFD.

Items 2-4: PFM Exercise Information

The responses to items 2, 3 and 4 were analyzed independently, as well as grouped into an index. ANOVA was used to determine if any significant change occurred between the three groups over the three times (see Table 27. PFM Total=Knowledge + Importance + Commitment: ANOVA, and Figure 25. Results of PFM Exercise Indices

Over Times 1, 2 and 3). The ANOVA results showed $p<0.001$ indicating significant difference. While the index as a whole showed highly significant results, when the three components comprising this index were analyzed separately interesting information was unveiled.

Item 2: PFM Exercise Knowledge

The second item, PFM Exercise Knowledge, showed significant differences as the means of Groups A and B both significantly increased following the pelvic floor health education session.

When asked, "Do you know what pelvic floor muscle exercises (also known as 'Kegels') are?" the mean for all three groups was 82.41 out of a maximum 100, at Time 1. Group A mean increased from 85.42 at Time 1, to 97.92 and 100.00 for Time 2 and Time 3, respectively. Group B increased from 78.13 at Time 1, to a mean of 100.00 for Time 2 and Time 3. The observed lack of significant improvement from Time 2 to Time 3 for these two groups is due to the "ceiling effect" as the maximum attainable score is 100 (see Table 27a. PFM Exercise Knowledge: ANOVA, and Figure 25. Results of PFM Exercise Indices Over Times 1, 2 and 3).

In hindsight, it would also have been beneficial to ask participants if their knowledge regarding how to properly perform PFM exercises had altered following the education intervention to determine if their previous knowledge had been correct. Unfortunately, this was not included in the survey questions.

Item 3: PFM Exercise Commitment

PFM Exercise Commitment also produced interesting results. It did not show any improvement at Time 2, immediately following the education-intervention, presumably because participants had not had enough time to implement the PFM exercise program and lifestyle strategies into their daily schedules. The improvement became evident at Time 3 ($p<0.001$) (see Table 27b. PFM Exercise Commitment: ANOVA, and Figure 25. Results of PFM Exercise Indices Over Times 1, 2 and 3).

Item 4: PFM Exercise Importance

PFM Exercise Importance showed highly significant p-values of $p<0.001$ at Time 2 following the education intervention, and then appears to have hit a 'ceiling effect' as its importance could not show a significant increase at Time 3 (Group A mean=98.96 of a maximum 100, Group B mean=90.63 of a maximum 100) from its high level at Time 2 (Group A mean=96.35 of a maximum 100, Group B mean=93.75 of a maximum 100).

Of clinical importance is the dramatic increase in both Groups A and B immediately following the initial education session. Equally, if not more interesting, is the increase in PFM Exercise Importance seen in Group A, from Time 2 to Time 3, following their re-education session, whereas Group B noted a slight drop in PFM Exercise Importance over that time period. While the slight decrease observed for Group B was not statistically significant, it appears that the re-education session offers a motivational impact to PFM Exercise Importance in addition to the highly significant

increase in pelvic floor health knowledge (see Table 27c. PFM Exercise Importance: ANOVA, and Figure 25. Results of PFM Exercise Indices Over Times 1, 2 and 3).

Item 5: Sought Pelvic Floor Health Information

Interesting information was detected from the responses to item 5 re: information seeking behaviours. The eight participants from the control group, Group C, who noted that they had sought pelvic floor health information showed a large increase in incontinence-related knowledge acquisition compared to those controls who did not seek information. However, for the control group's eight pelvic floor information seekers there was actually a smaller increase in POP-related knowledge noted compared to participants in the control group who did not seek information. This finding suggests that seeking helpful or correct information regarding POP may be more difficult than searching for information related to incontinence. Another possible explanation is that the incontinence information is more easily understood or retained compared to the POP-related information.

While the PIKQ scores of the eight participants of the control group increased, Kruskal-Wallis testing with post-hoc Mann-Whitney U analysis, as well as the ANOVA combined with post-hoc Tukey analysis, show that this increase was not significant. The only exception observed was for Index PIKQ-POP, which produced a significant finding ($p<0.05$) from Time 2 to Time 3, for Group C. It is also possible that more members of the control group sought information than revealed on the survey.

While item 5 was useful in identifying those Group C participants who had sought pelvic floor health information independently, upon reflection, it would have been better to include this item only at the completion of the third survey rather than at the beginning

of the second and third online surveys. It is possible that the inclusion of this item itself prompted the information-seeking behaviour or condoned the action. Had it only been included at the conclusion of the final survey, encouraging information seeking would have been beneficial without potentially jeopardizing the data collected for the research study. That noted, the analysis showed only minor impact of this information-seeking behaviour on the overall study findings.

Integration of Study Results

The results of this study show an interesting connection and association between the variables examined. Participants receiving pelvic floor health and PFM exercise education responded with a dramatic increase in pelvic floor health knowledge. This rise in knowledge led to an increase in awareness to the presence of one's own PFD symptoms. With this recognition of symptoms, combined with the newly acquired knowledge and skills necessary to combat the PFD symptoms, participants became motivated into action.

The education sessions offered healthy dietary and toileting strategies in addition to information on the importance of keeping one's PFM healthy through proper exercise. Following the education session, participants' knowledge specific to PFM exercise increased, combined with a dramatic rise in appreciation toward the important contribution of the PFM to overall health. Following this was the upsurge in PFM exercise commitment. Over time the impact of the healthy pelvic floor strategies and PFM exercise could be detected as a highly significant decrease in the presence of PFD

symptoms resulted. Finally, with the reduction in PFD symptoms came the increase in QoL as bladder, bowel and prolapsing of pelvic organs had significantly less negative impact on activities of daily living.

For the participants of Group A, the education session was repeated resulting in a further increase in pelvic floor related knowledge and an additional rise in motivation as the importance of PFM exercise continued to increase, while participants of Group B (receiving only the initial education session) noted a slight drop in this variable. From this is it evident that reiterating and reinforcing this education has an important benefit. This supports the 2009 findings by Geoffrion et al. (30), noting the necessity of reinforcing education.

Study Results Compared to Existing Literature

The results of this research study support the findings of existing literature in the field of PFD. The lack of pelvic floor health knowledge noted in this study corresponds to results of previous studies evaluating awareness of PFD. The original study drawing attention to this deficiency was published in 2003 by the International Continence Society and unveiled the profound lack of awareness toward SUI in all nine countries studied (France, Germany, Italy, Spain, Sweden, United Kingdom, Canada, Mexico and Australia) (2). In this study, only 2% of the women suffering with SUI knew the name of their PFD and only 2% recognized coughing and sneezing as triggers to their urinary incontinence.

The current research presented in this document supports the 2003 study by Davis et al. (12), showing that to improve health care in the United Kingdom, increasing PFD education and awareness is necessary and identified within a list as two of the five highest priorities. Furthermore, the need for raising awareness in the United Kingdom was identified for both the public and medical professional sectors, with a suggested focus to be aimed at the consequences of childbirth (11).

The research results presented in this document also directly align with the PFD-related research in both Greece (13) and South Africa (14). These 2010 studies uncovered a high prevalence of female urinary incontinence matched with a very low level of knowledge related to the disorder and suggested a need to focus on enlightening women on PFD risk factors and available medical treatment options (13) with PFM exercise being a first-line defense (14). Additional research showed that of participants in a United Kingdom study (15), less than 20% felt satisfied with their understanding of their PFD, and these same responses were communicated by the participants of this thesis study as numerous e-mails were sent to the researcher following the education presentation(s) with gratitude for receiving this necessary information on pelvic floor health and PFM exercise.

The existing rationale supporting the need to raise pelvic floor health and PFD awareness is compelling, to say the least. Numerous reasons exist including the fact that PFD is highly preventable and should, therefore, be considered a public health issue (17). PFD is a high financial burden both personally and to the medical system (18). While health care professionals should be comfortable discussing all aspects of health-related

conditions, the World Health Organization recognized female urinary incontinence as the last medical taboo (10).

While those reasons alone support the need for raising pelvic floor health and PFM exercise knowledge, there are many more reasons to consider that hit 'closer to home' for women in society. It has been shown that poor coping strategies lead to worsening of PFD symptoms and even cause co-occurrence of different types of PFD in neighbouring pelvic organs and, therefore, correct information related to self-coping strategies is imperative (21). Moreover, most women have experienced, or will experience, childbirth and since this has been identified as a major risk factor for PFD (such as POP and both urinary and fecal incontinence), it is critical to enlighten women on the importance of pelvic floor health and PFM exercise (22). Research shows that women receive very little information on this topic during pre-natal education sessions and often are not even taught proper PFM strengthening exercises (23).

Furthermore, women want this information (15) and require correct facts in order to make informed decisions (37). By allowing the commonly believed PFD-related fallacies to perpetuate, barriers to seeking PFD medical treatment and care are supported (38). Conversely, by raising pelvic floor health awareness, seeking medical care for PFD symptoms is encouraged (39).

Finally, while the prevalence of PFD is high, the prediction for future epidemiology is an upward trend with staggering statistics if nothing is done to change this course. Raising pelvic floor health awareness and self-care strategies to prevent and correct PFD is paramount to altering this forecasted development (3).

The results of the study presented in this thesis support the 2009 and 2010 Canadian research regarding the effects of pelvic floor health knowledge transfer. Both Geoffrion et al (30)., and Tannenbaum et al (34)., have shown that education workshops have successfully increased knowledge related to pelvic health and PFD, and subsequently resulted in decreasing, or eliminating, PFD symptoms through implementation of healthy coping strategies and behaviours, and seeking appropriate medical treatment and care (30,34).

According to the American Urogynecologic Society (AUGS), PFD is experienced by as many as one out of three women and 80-90% of these women note significant improvement if they seek help (106). Recent research has shown that for women 40 years of age and older, approximately 41% suffer from urinary incontinence with most grading their symptoms as moderate to severe, and yet less than 30% will seek medical attention. Furthermore, only 12% of these women are examined by a pelvic floor specialist. This 2011 study by Minnassian et al., highlights the crucial fact that not just women in society but also primary care providers need to be educated about this treatable form of PFD and the available, and underutilized medical resource of pelvic floor specialists (107).

AUGS stresses the importance of enlightening patients on the life-altering psychological impact of PFD (such as loss of self-esteem and the high risk of depression), the negative social impact (avoidance of social gatherings and involvement with friends and community), the often devastating sexual consequences (such as loss of libido and the feeling of no longer being desirable or attractive), and also the dramatic economic sequelae (personally and societally). Since proper medical intervention shows significant improvement for most individuals, and the corollary of accepting PFD as a

normal part of life leads to dramatic loss in QoL, it is imperative that medical providers be active in encouraging conservative measures such as the necessity of healthy dietary and lifestyle alterations and appropriate PFM exercise prescription via referral to a properly trained pelvic floor physiotherapist as a first-line defense strategy. Following this, more invasive medical interventions such as pharmaceutical options and surgical approaches are indicated as appropriate (108).

While further research is needed to appreciate the full impact of raising pelvic floor health and PFM exercise knowledge and awareness, the results noted in this thesis support current literature findings. Exhaustive literature review suggests that this study is the first of its kind to investigate the effect of raising awareness toward women in society in contrast to targeting patients seeking medical attention for existing PFD symptoms. The highly significant results noted in this population supports the need for focussing this education toward the general female public in the prevention of PFD and correction of PFD symptoms earlier in their development rather than waiting for symptoms to progress to a point where QoL has been more seriously compromised.

Limitations and Assumptions

As is commonly a consideration with health related research studies, the placebo effect may have influenced the responses of the participants with regard to the presence of PFD symptoms. That noted, it is the basis of this research study that raising awareness of the presence of PFD symptoms will lead to participants' recognition of the presence of previously undetected dysfunctions, rather than the belief that fictitious, or non-existent,

problems exist. As there was very little effect observed for the control group, it is unlikely that the intervention groups would note a placebo effect. In this study the placebo effect does not seem to have had an impact.

Because the results of this study are founded completely on the honesty and openness of participants to divulge personal information that may be embarrassing in nature, the study may be limited by the resistance of participants to discuss their PFD symptoms in full due to the highly personal elements and sensitive nature of the questions (as was observed by the withdrawing of four participants for this reason, at the commencement of the study). There is no way of detecting that full disclosure and accuracy has been maintained during data collection. Additionally, some participants may require time to accept the presence of PFD symptoms and their responses may reflect an element of denial of their existence.

The recollection of memory plays a role in determining responses to specific habits. Many of the questions were related to behaviors to which people often have not given much, if any, previous thought. As such, it may be difficult to produce answers accurately reflecting their behaviors especially when first asked the items for creating a baseline analysis at Time 1.

As multiple sessions were necessary to accommodate the schedules of the volunteers and limitations on Audio-Visual room availability, the sole physiotherapist administering the education workshops attempted to avoid deviating from the prepared presentation, unintentionally altering the information provided to participants. However, some variance within the education sessions was unavoidable, as, while not encouraged to do so, the participants were not prevented from asking questions throughout the

workshop. To facilitate this, Groups A and B were combined for the initial presentations in hopes of producing equal opportunity of variance between the two groups of participants. That noted, if the effect of multiple presentation sessions impacted the study, this would have contributed to the variability 'within subjects' (Error 2) and thus reduced the probability of detecting significant differences. From the results of this study, this does not appear to have taken place.

While one of the survey items related to the participants' belief that they do, or do not, recognize that they personally experience PFD symptoms, it is unknown whether they had sought previous medical attention for these issues. Also, participants in Groups A and B may have chosen to seek medical care or treatment following the education workshop and this was not evaluated in the data collection. Again, the premise of this research study was to encourage participants to learn more about pelvic health and PFM exercise, as well as to become aware of the medical treatment options and resources available for PFD. So, while participants possibly seeking medical attention during the study is not optimal, and is a consideration in evaluating the outcomes, it is not necessarily a limitation to the study design.

Three items on the surveys addressed views toward PFM exercise and whether or not participants routinely perform them. It must be recognized that offering only verbal exercise instruction is a limitation to this research study as internal vaginal and/or rectal examination by a qualified medical practitioner skilled in PFM assessment is necessary to confirm correct exercise technique and optimal exercise prescription. Studies have shown that simple verbal exercise instruction does not ensure the proper execution of PFM exercise technique. In fact, one study found that 51% of participants performed their

PFM contraction incorrectly, and 25% used a technique that may actually increase PFD symptoms, following brief verbal instruction on PFM exercises (147).

The purpose of the study was to build awareness regarding pelvic floor health and PFD, and in doing so encourage proper PFM exercise regimes, healthy diet, lifestyle choices and toileting behaviors, as well as to enlighten the public on available medical treatment options that should be sought to prevent, reduce or resolve PFD symptoms. However, while participants were asked about their commitment to PFM exercise, they were not asked if they had altered any dietary factors or toileting postures and behaviors during the study, which may affect PFD symptoms and pelvic floor health. It is hoped that participants implemented the healthy strategies presented; however, only practices related to PFM exercise were documented.

Participants were also not asked if they had sought medical attention for PFD prior to commencing the research study, nor were they asked if they sought medical care during the study. This noted, if the participants had sought medical assistance independent from the study, this would result in an increase in variability in the responses and thus increase the experimental error making it more difficult to detect significant differences. As this did not occur, it can be assumed that participants did not seek medical attention during the time of the study.

It is important to note that any education impact has the confounding factors of leading people to seek more information and because of this, it was anticipated that members of the control group might seek out pelvic floor health information following completion of the surveys. This may especially be a consideration for participants who become aware of personally experiencing symptoms of PFD because of the survey

questions, while for others, it may simply ‘spark their interest’. This was unavoidable in a study of this nature and may have occurred in participants in any of the three groups. It was also recognized that any attempt to ask the control group participants to avoid seeking pelvic floor health information might encourage this behaviour by further raising their interest. To accommodate for this unavoidable confounding factor, participants were asked if they had sought out any pelvic floor health information following the first or second surveys. In this way, those having received additional information could be identified and their data analyzed to see if this knowledge-seeking behaviour impacted the overall results of the study.

Another concern in the study design was the recruitment of volunteers for the research study. While it is optimal for study participants to be drawn from a wide range of industries, allowing for an increase in generalizability of the results, this often becomes a practical obstacle in research. The generous access and support offered by Manitoba Hydro and its associates was critical to the implementation of this study and while the results may not be extrapolated to the general female population, the findings do benefit the field of pelvic floor health. Further replication of this study within other occupational settings, such as the fields of nursing, teaching, etc., would serve to further support these findings. It is clear that continued research in this area is necessary.

While identification of study limitations is important, it is believed that the overall research design for this study is solid and appropriately identified alteration in pelvic floor health knowledge and the presence of PFD symptoms. The fact that highly significant effects were consistently observed as expected, indicates that the methodology used in this study was sound as it did not contribute to large experimental errors.

CONCLUSION

This research study is believed to be unique as it is the first randomized control study evaluating the pelvic floor health knowledge base of the general female public. Previous pelvic floor health studies have focused their assessment on the knowledge base of patients seeking medical attention for existing PFD symptoms. Furthermore, they were limited to studying PFD patients requesting medical attention for these issues and did not have a control group for use of comparison.

Clinical Relevance

PFD affects women on a global scale and in staggering numbers. The common element physically connecting the bladder, uterus and bowel is the PFM. The PFM has been found to be dysfunctional in 77.2% of patients presenting for urinary, gastrointestinal and sexual symptoms (4). As the PFM anatomically links and functionally impacts each pelvic organ, it is believed that the existence of PFD in a single organ leads to concomitant PFM dysfunction, and vice versa, thereby increasing the likelihood of developing PFD in neighbouring organs. This is supported by the high prevalence of co-occurring PFD (PFD in multiple domains) revealed in this study and emphasizes the necessity of early symptom detection to ensure treatment and resolution of the initial PFD.

As these dysfunctions are often embarrassing in nature and society reinforces the fallacies that these symptoms are simply a normal and acceptable fact of life for women;

most learn to live with their symptoms and few are aware that help is available. For those who do seek help, many will not realize the realm of PFD and, therefore, will not discuss all of the symptoms they are experiencing, not realizing that these other symptoms may be relevant to the issues bringing them to the clinic.

It has been suggested that when assessing a female presenting with any form of PFD, it is necessary to ask questions on all domains of PFD since co-occurrence is so common and therefore, to ensure proper health care, all forms of PFD must be investigated. When PFD is left undiagnosed, individuals can suffer from disorders in other pelvic organs, leading to negative effects on QoL, social and work interactions (57). The results of this research study support the importance of thorough and complete PFD medical investigation for all patients presenting with PFD. This medical examination must include all five PFD domains (bladder dysfunction, bowel dysfunction, POP, pelvic pain and sexual dysfunction) to be considered exhaustive and ensure no dysfunction has been overlooked. Public and patient education must include an all-encompassing approach to PFD for the prevention and correction of the extensive scope of PFD symptoms. In situations where a medical practitioner specializes in a single PFD domain, for example, a urologist having expertise in bladder dysfunction, referral to other medical consultants will be indicated.

Furthermore, in light of the current controversy surrounding the safety of urogynecological surgical procedures (106-115), this research is timely in highlighting the importance of education and conservative management as first-line defense for PFD.

This study has shown that by offering pelvic floor health and PFM exercise education to women working in an office environment, significant increase in the pelvic

floor health knowledge base of participants following the education intervention is evident. Furthermore, it is shown that a significant benefit resulted following reinforcement of this education.

This research study was successful in showing that a high prevalence of PFD, and high co-occurrence of PFD (symptoms in more than one of the five PFD domains), existed within the female population studied. The commonness of PFD symptoms in these women was compounded by the low levels of pelvic floor health knowledge and a lack of awareness to the presence of one's own symptoms of PFD. By simply increasing pelvic floor health awareness and improving the PFM function and habits of the participants, these PFD symptoms were significantly decreased and in a relatively short period of time. Furthermore, the impact of the reduction in PFD symptoms lead to a significant improvement in QoL related to PFD.

As a side product, this work has established methodology and produced a set of standardized indices, named Berzuk Indices of Pelvic Floor Dysfunction (BIOPFD), to measure the various aspects of PFD and pelvic floor health-related knowledge in a standardized fashion. Further work condensing the BIOPFD into major indices measuring general pelvic floor health and PFD may be desirable. This work has also generated an all-encompassing objective measuring tool for PFD, the PFDI-20(+2), allowing collection of PFD symptoms evaluation of all five PFD domains. The contribution of the PFDI-20(+2) for data collection, partnered with the BIOPFD for data analysis, aims to benefit future PFD research.

A high prevalence of PFD, and co-occurrence of PFD, has been matched with low levels of pelvic floor health knowledge and PFD symptom recognition on a global scale.

This study suggests that Canada, like many other countries, stands to benefit greatly by raising awareness regarding pelvic floor health and PFM function, to both the public sector and to medical care providers.

TABLES

Table 1. Evidence for the Lack of Pelvic Floor Health Knowledge

YEAR/LOCATION	RESEARCHERS	OUTCOME/RESULTS
2003 France, Germany, Italy, Spain, Sweden, United Kingdom, Canada, Mexico, Australia	International Continence Society (Wirthlin Worldwide) (2)	Profound lack of pelvic floor health awareness, globally. Only 2% knew the name of their PFD and only 2% recognized triggers such as coughing and sneezing. 1/3 felt there was no help, ½ too uncomfortable to talk about it.
2003 United Kingdom	Davis et al. (11)	Need for raising PFD awareness to public and professional sector. Focus to consequences of childbirth.
2010 United Kingdom	Davis et al. (12)	5 Areas for PFD Health Care Improvement identified PFD education and awareness as 4th and 5th priorities
2010 Greece	Liapis et al. (13)	High prevalence of female urinary incontinence matched with a very low level of knowledge related to their disorder. Focus to PFD treatment options and risk factors.
2010 South Africa	Madombwe et al. (14)	High prevalence of female urinary incontinence matched with a very low level of knowledge related to their disorder. Disturbed that PFM exercises not first-line defense.
2010 United Kingdom	International Urogynecology Association Hawary et al. (15)	Patients scored 5 out of maximum 10 knowledge levels for their own PFD. Less than 20% felt satisfied with their understanding of their PFD.

Table 2. Rationale for Raising Pelvic Floor Health Awareness

REFERENCE	RATIONALE FOR RAISING AWARENESS
Sampselle et al. (17) 2004	PREVENTABLE (It should, therefore, be considered a public health issue)
Herbruck (18) 2008	HIGH FINANCIAL BURDEN (Therefore early intervention and education for prevention warranted)
Voelker (10) 1998	LAST MEDICAL TABOO (World Health Organization's reference to urinary incontinence)
Milne et al. (21) 2006	POOR COPING STRATEGIES INCREASE PFD (Women need correct information for self-coping strategies)
Bortolini et al. (22) 2010	CHILDBIRTH IS A MAJOR RISK FACTOR FOR PFD (Vaginal delivery leads to POP, urinary and fecal incontinence due to perineal trauma)
McLennan et al. (23) 2006	PREGNANT WOMEN GIVEN LITTLE PELVIC FLOOR HEALTH EDUCATION AND OFTEN NO PFM EXERCISE EDUCATION
Sung et al. (37) 2010 Hawary et al. (15) 2010	WOMEN WANT PELVIC FLOOR HEALTH INFORMATION (Women want to know more about their PFD to make informed decisions)
Goldstein et al. (38) 1992	PERPETUATING FALLACIES ARE BARRIERS TO SEEKING PFD MEDICAL ATTENTION
Brittain et al. (39) 2001	PELVIC FLOOR HEALTH CAMPAIGNS LEAD TO AN INCREASE IN SEEKING PFD MEDICAL CARE
Wu et al. (3) 2010	CURRENT PREVALENCE TRENDS UPWARD (In 2010, 355,096 incontinence + POP surgeries in the USA. If nothing changes, the trend shows up to 600,000 surgeries in 2050)

Table 3. Existing Studies for Raising Awareness re: Pelvic Floor Health

STUDY	FORUM FOR PELVIC FLOOR HEALTH KNOWLEDGE TRANSFER	IMPACT OF PELVIC FLOOR HEALTH EDUCATION
Geoffrion et al. (30) Canada 2009	**Education workshop**	**Significant increase in knowledge ($p<0.01$). Slight drop in retained knowledge supports need for re-education. Significant decrease in PFD symptoms ($p<0.001$). Significant increase in QoL ($p=0.005$).**
Tannenbaum et al. (34) Canada 2010	**Education workshop**	**94% increase in knowledge and attitude toward urinary incontinence. 43% instilled healthy coping strategies. 42% sought medical help, of those who did not, 75% no longer had a need. 85% reported positive change in bladder behaviors.**
Franzen et al. (41) Sweden 2008	**Information pamphlets**	**49% felt self-treatment information was useful. 21% instilled self-treatment techniques (most commonly PFM exercises). 10% sought medical help.**

Table 4. Pelvic Floor Dysfunction (PFD) Risk Factors!

Factors that Increase your Risk of Pelvic Floor Dysfunction (PFD)
Pregnancy
Vaginal Delivery
Aging
Diastasis Recti
Certain Medications
Recurrent Urinary Tract Infection or Vaginal Yeast Infection
Being Female
Childhood Incontinence
Family History of PFD
Menopause/Hormonal Changes
Increased Weight/Increased BMI
Hysterectomy & Other Pelvic Floor/Abdominal Surgeries
Chronic Cough
Chronic Constipation
Smoking
Diet Containing Bladder & Bowel Irritating Foods & Beverages
Medical Conditions such as Alzheimer's, Diabetes, Multiple Sclerosis, Parkinson's Syndrome
Radiation & Chemotherapy
The Presence of existing PFD, if not treated, puts you at risk for Additional PFD's

Table 5. Pelvic Floor Dysfunction (PFD) Warning Signs!

Pelvic Floor Dysfunction (PFD) Warning Signs!
Do you refrain from laughing whole-heartedly when you laugh because of your bladder?
Do you cross your legs when you sneeze?
Do you know the location of every washroom in your neighborhood?
Do you use the washroom more than 9 times per day?
Do you leak urine when you cough, sneeze or exercise?
Do you often have a strong urge to void (need to pee immediately)?
Do you race your children or grandchildren to the washroom?
Do you feel the need to pee just as you put your key in the door?
Have you ever altered any physical or social activities because of your bladder?
Do 3 days or more pass between having a bowel movement?
Do you have more than 3 bowel movements per day?
Do you have pain with intercourse?
Do you feel weak in your pelvic floor area?
Do you feel tension in your pelvic floor area?

Table 6. Pelvic Floor Muscle (PFM) Involvement in PFD

REFERENCE	OUTCOME/RESULTS
Morin et al., (9) 2004	PFM impaired in women with SUI.
Iantorno et al., (64) 2007	76.3% of constipation referrals were due to PFM dysfunction.
Slieker-ten Hove et al., (51) 2004	40% of women had significant POP (ages 45-85) and poor co-ordination of PFM likely causative.
Voorham-van der Zalm (4) 2008	77.2% of those with urinary, gastrointestinal and sexual dysfunction had PFM dysfunction.
Messa et al., (80) 1985	Improving PFM strength improves sexual function, sexual desire, sexual orgasm and performance.
Prather et al., (57) 2007	When PFM is hypertonus, bladder and bowel emptying may be compromised and pelvic pain and sexual dysfunction may arise. When PFM is hypotonus, bladder and bowel incontinence may arise. An unhealthy PFM may fluctuate between hyper and hypotonicity.

Table 7. Prevalence of PFD: Bladder Dysfunction

REFERENCE	OUTCOME/RESULTS
Mayo Clinic Website (52) 2002	50% of female Americans will experience urinary incontinence
Nitti (58) 2002	OAB estimated in 17 million Americans and 50 to 100 million people worldwide may be understated
Wirthlin Worldwide (2) 2003	Canada, at 42%, had the highest incidence of SUI of the 9 countries studied.
Nygaard et al., (82) 2008	15.7% urinary incontinence (of 1961 women)
Lawrence et al., (32) 2008	15% SUI + 13% OAB (of 4130 women)
Rortveit et al., (84) 2010	69% urinary incontinence (of 2106 women)
UniDet Research (92) 2002	2.9 million Canadians suffer with OAB yet less than 20% seek treatment.
Irwin et al., (53) 2006	13.1% urinary incontinence (Germany, Sweden, Italy, Canada, United Kingdom)
Dooley et al., (54) 2008	49.6% urinary incontinence in women (USA)
Melville et al., (55) 2005	45% urinary incontinence in women (USA)
Waetjen et al., (56) 2007	46.7% urinary incontinence in women (USA)

Table 8. Prevalence of PFD: Bowel Dysfunction

REFERENCE	OUTCOME/RESULTS
Zutshi et al., (59) 2007	36% fecal incontinence 74% flatual incontinence (of parous females)
Stewart et al., (63) 1999	14.7% constipation (of 10,000 telephone surveys)
Nygaard et al., (82) 2008	9.0% anal incontinence (of 1961 women)
Lawrence et al., (32) 2008	25% anal incontinence (of 4130 women)
Rortveit et al., (84) 2010	6% anal incontinence (of 2106 women)
Tin et al., (65) 2010	19.7% anal incontinence of loose stool 7.7% anal incontinence of formed stool 38.2% flatual incontinence (of women with 3rd or 4th degree obstetrical tearing)
Fareesa et al., (66) 2010	Of 463 women presenting for urogynecologic care, only 3% reported bowel dysfunction, however, questionnaires revealed 83% presented with bowel dysfunction.
Whitehead et al., (60) 2009	8.9% anal incontinence
Bharucha et al., (61) 2005	12.1% anal incontinence
Varma et al., (62) 2006	24% anal incontinence

Table 9. Prevalence of PFD: Pelvic Organ Prolapse (POP)

REFERENCE	OUTCOME/RESULTS
Shull (67) 1999	Estimates 43 million American women will have some degree of POP by 2030.
Slieker-ten Hove et al., (51) 2004	40% of women had significant POP (ages 45-85).
Nygaard et al., (82) 2008	2.9% POP (of 1961 women).
Lawrence et al., (32) 2008	6% POP (of 4130 women).
Rortveit et al., (84) 2010	8% POP (of 2106 women).
Dietz (71) 2008	$1 billion spent on more than 200,000 POP surgeries in USA each year. 30% are repeated procedures.
Rortveit et al., (68) 2007	5.7% POP
Hendrix et al., (69) 2002	41.1% POP
Handa et al., (70) 2004	24.6% cystocele 3.8% uterine prolapse 12.9% rectocele

Table 10. Prevalence of PFD: Pelvic Pain & Sexual Dysfunction

REFERENCE	OUTCOME/RESULTS
Wenof et al., (72) 1999	9.2 million American women have chronic pelvic pain. 61% of these do not have a diagnosis.
Matias et al., (73) 1996	14.7% prevalence of pelvic pain in the U.S.A. (women ages 18-50)
Zondervan et al., (74) 2000	3.8% prevalence of pelvic pain in the U.K. (women ages 15-73)
Zondervan et al., (75) 1999	Bladder and bowel dysfunction are more commonly noted triggers of pelvic pain than reproductive tract disorders.
Handa et al., (78) 2004	Sexual dysfunction is associated with bladder incontinence and POP.
Barber et al., (79) 2002	Sexual dysfunction is associated with bladder incontinence and POP.
Dean et al., (81) 2008	PFM exercise improved sexual function in 7 of 10 domains. Urinary and fecal incontinence had negative effects on sexual pain, orgasm lubrication and arousal.

Table 11. Prevalence of PFD: Co-occurrence of PFD

REFERENCE	OUTCOME/RESULTS
Lawrence et al., (32) 2008	37% had at least 1 PFD (of 4130 women). 80% of those with SUI or OAB, 48% with fecal incontinence and 69% with POP had multiple forms of PFD.
Rortveit et al., (84) 2010	34% had at least 1 PFD (of 2106 women). 18% of those with urinary incontinence, 60% with fecal incontinence and 49% with POP had multiple forms of PFD.
Berzuk (33) 2009	100% of the patients seeking medical attention for a single PFD had co-occurring PFD, of which, 90% had PFD in unrelated domains. 88% had symptoms in 3 or more of 9 domains. Of the control population, 94% reported at least 1 PFD.
Gordon et al., (77) 1999	3% of women 60 years and older, and 29% of women under 60, experienced urinary incontinence during sexual intercourse.

Table 12. Consequences of PFD

REFERENCE	OUTCOME/RESULTS
Nitti (58) 2002	People with OAB feel their bladders control their lives. Bladder dysfunction leads to emotional disturbances and social isolation.
Wirthlin Worldwide (2) 2003	SUI associated with negative impact on career, physical activity, intimacy, sexual activity, self-confidence, self-esteem, social activity and vitality.
UniDet Research (92) 2002	OAB negatively affects enjoyment and frequency of sexual relationships, hugging and cuddling. Almost 20% avoid romantic relationships because of bladder dysfunction.
Davis et al., (11) 2003	Embarrassment, sexual inhibition and social isolation result from PFD.
Resnick (50) 1995	Urinary incontinence is associated with perineal rashing, infection, urinary tract infection, ulcerations, falls, fractures, embarrassment, social isolation, depression and stigmatization.
Fultz et al., (94) 2005	Incontinence negatively impacts work and career. Physical activity, loss of ability to complete tasks without interruption, impaired concentration and diminished self-confidence are associated with bladder dysfunction.
Howard (95) 2003	Chronic pelvic pain persists for many years, consisting of medical 'misadventures', disappointment, marital discord and loss of employment.

Table 13a. PFD Symptom & QoL Questionnaires

SURVEY	DEPENDANT VARIABLE	PROS	CONS
PISQ (117) **PISQ-12** (122)	1. Sexual function in women with urinary incontinence &/or POP 2. QoL	-Valid and reliable -Short form available -Ease of self-administration -Ease of scoring -Solid design structure -Assessed QoL items -Stood the test of time	-Limited in use to sexual function assessment in women with urinary incontinence &/or POP
KHQ (118) **KHQ-7** (118)	1. Feelings toward incontinence symptoms 2. QoL	-Valid and reliable -Ease of self-administration -Short form available -Available in several languages -Assessed QoL items -Has stood the test of time	-Tedious scoring system with difficulty accommodating for 'not applicable responses' -Limited to urologic use and does not evaluate PFD symptoms
P-QOL (119)	1. PFD symptoms (bladder, bowel, sexual, pelvic pain and POP) 2. QoL	-Valid and reliable -Encompasses all areas of PFD -Ease of self-administration -Available in several languages -Ease of scoring -Assessed QoL items	-While it assesses ALL areas of PFD, it does so only in patients with POP -Short form not available
PFDI (31) **PFIQ** (31) **PFDI-20** (136) **PFIQ-7** (136)	1. PFD symptoms (bladder, bowel, sexual, pelvic pain and POP) 2. QoL	-Valid and reliable -Encompasses all areas of PFD -Short forms available -Available electronically -Ease of self-administration -Ease of scoring -Assessed QoL items -Has stood the test of time	-Limited assessment of sexual dysfunction and pelvic pain in the widely used short versions
ePAQ-PF (120)	1. PFD symptoms (bladder, bowel, sexual, pelvic pain and POP) 2. QoL	-Valid and reliable -Encompasses all areas of PFD -Online validation -Ease of self-administered -Assessed QoL items	-Short form not available at this time and existing form is lengthy and cumbersome to score (it is a relatively new contribution) -Not available on paper
PelFIs (1,33)	1. PFD symptoms (bladder, bowel, sexual, pelvic pain and POP) 2. QoL	-Valid and reliable -Encompasses all areas of PFD -Assessed QoL items	-Short form not available at this time and existing form cumbersome (new tool) -Requires administration -Cumbersome scoring

Table 13b. Knowledge-Acquisition Questionnaires

SURVEY	DEPENDANT VARIABLE	PROS	CONS
Focused Knowledge Questionnaire (30)	**Knowledge** re: -PFM & exercise -Bladder & bowel friendly diet -Bladder irritants -Bladder function -Voiding frequency -Bladder urgency -Risk factors to incontinence & POP -POP symptoms -Use of pessaries -Treatment options	**-Ease of self-administration** **-Ease of scoring** **-Simple and straightforward** **-Inclusion of conservative management**	**-Validation process not complete** **-Does not assess knowledge of all PFD (i.e. pelvic pain, sexual function not assessed)** **-No accommodation for guessing may be an issue, however, too soon to say at this point as the tool is not yet released**
PIKQ (139)	**Knowledge** re: -PFM & exercise -Bladder & bowel friendly diet -Bladder irritants -Bladder function -Voiding frequency -Bladder urgency -Risk factors to incontinence & POP -POP symptoms -Use of pessaries -Treatment options	**-Valid and reliable (the only such existing tool)** **-Ease of self-administration** **-Ease of scoring** **-Simple and straightforward** **-Inclusion of conservative management** **-Attempt to discourage guessing responses by offering a "Don't Know" option**	**-Does not assess knowledge of all PFD (i.e. pelvic pain, sexual function not assessed)** **-Still a relatively new contribution and not extensively used in research and clinical practice as yet**

Table 14. Variable Coding

ITEM	ID	GROUP	TIME	MIN	MAX	CODING
Subject	001	General	1, 2, 3	A001	C052	As is
Group	002	General	1, 2, 3	A	C	Groups A, B, C
Time	003	General	1, 2, 3	1	3	Time 1, 2, 3
Consent	004	General	1	0	1	1, 0
D1age	101	DEMOG	1	1	9	1-9 as per questionnaire
D2edu	102	DEMOG	1	1	7	1-7 as per questionnaire
D3marital	103	DEMOG	1	1	5	1-5 as per questionnaire
D4income	104	DEMOG	1	1	5	1-5 as per questionnaire, blank for no answer
D5race	105	DEMOG	1	1	6	1-4 then 5-Aboriginal,6-East Indian
D6health	106	DEMOG	1	1	3	3, 2, 1
D7preg	107	DEMOG	1	0	5	0-5 as per questionnaire
D8vagdel	108	DEMOG	1	0	5	0-5 as per questionnaire
D9csect	109	DEMOG	1	0	5	0-5 as per questionnaire
D10.1epid	110.1	DEMOG	1	0	1	1 if checked, 0 if not
D10.2epis	110.2	DEMOG	1	0	1	1 if checked, 0 if not
D10.3tear	110.3	DEMOG	1	0	1	1 if checked, 0 if not
D10.4vacm	110.4	DEMOG	1	0	1	1 if checked, 0 if not
D10.5forcp	110.5	DEMOG	1	0	1	1 if checked, 0 if not
D11mnstr	111	DEMOG	1	1	5	1-5 as per questionnaire
HavePFD	201	PFD	1, 2, 3	0	1	1, 0, blank
PFM1	202	PFM	1, 2, 3	0	1	1, 0, 0.5
PFM2	203	PFM	1, 2, 3	0	4	4, 3, 2, 1, 0
PFM3	204	PFM	1, 2, 3	0	4	4, 3, 2, 0, 1
PFinfo	205	PFD	2,3	0	1	1, 0
KUI01	301	KUI	1, 2, 3	0	1	Disagree=1, Agree=0, Don't know=blank
KUI02	302	KUI	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KUI03	303	KUI	1, 2, 3	0	1	Disagree=1, Agree=0, Don't know=blank
KUI04	304	KUI	1, 2, 3	0	1	Disagree=1, Agree=0, Don't know=blank
KUI05	305	KUI	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KUI06	306	KUI	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KUI07	307	KUI	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KUI08	308	KUI	1, 2, 3	0	1	Disagree=1, Agree=0, Don't know=blank
KUI09	309	KUI	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KUI10	310	KUI	1, 2, 3	0	1	Disagree=1, Agree=0, Don't know=blank
KUI11	311	KUI	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KUI12	312	KUI	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KPOP01	401	KPOP	1, 2, 3	0	1	Disagree=1, Agree=0, Don't know=blank
KPOP02	402	KPOP	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KPOP03	403	KPOP	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KPOP04	404	KPOP	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KPOP05	405	KPOP	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KPOP06	406	KPOP	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KPOP07	407	KPOP	1, 2, 3	0	1	Disagree=1, Agree=0, Don't know=blank
KPOP08	408	KPOP	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KPOP09	409	KPOP	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KPOP10	410	KPOP	1, 2, 3	0	1	Disagree=1, Agree=0, Don't know=blank
KPOP11	411	KPOP	1, 2, 3	0	1	Agree=1, Disagree=0, Don't know=blank
KPOP12	412	KPOP	1, 2, 3	0	1	Disagree=1, Agree=0, Don't know=blank
PFDI01	501	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI02	502	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI03	503	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI04	504	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI05	505	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI06	506	PFDI	1, 3	0	4	0-4 as per questionnaire

ITEM	ID	GROUP	TIME	MIN	MAX	CODING
PFDI07	507	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI08	508	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI09	509	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI10	510	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI11	511	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI12	512	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI13	513	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI14	514	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI15	515	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI16	516	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI17	517	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI18	518	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI19	519	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI20	520	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI21	521	PFDI	1, 3	0	4	0-4 as per questionnaire
PFDI22	522	PFDI	1, 3	0	4	0-4 as per questionnaire
BLAD1	601	PFIQ	1, 3	0	3	0-3 as per questionnaire
BLAD2	602	PFIQ	1, 3	0	3	0-3 as per questionnaire
BLAD3	603	PFIQ	1, 3	0	3	0-3 as per questionnaire
BLAD4	604	PFIQ	1, 3	0	3	0-3 as per questionnaire
BLAD5	605	PFIQ	1, 3	0	3	0-3 as per questionnaire
BLAD6	606	PFIQ	1, 3	0	3	0-3 as per questionnaire
BLAD7	607	PFIQ	1, 3	0	3	0-3 as per questionnaire
BOWL1	701	PFIQ	1, 3	0	3	0-3 as per questionnaire
BOWL2	702	PFIQ	1, 3	0	3	0-3 as per questionnaire
BOWL3	703	PFIQ	1, 3	0	3	0-3 as per questionnaire
BOWL4	704	PFIQ	1, 3	0	3	0-3 as per questionnaire
BOWL5	705	PFIQ	1, 3	0	3	0-3 as per questionnaire
BOWL6	706	PFIQ	1, 3	0	3	0-3 as per questionnaire
BOWL7	707	PFIQ	1, 3	0	3	0-3 as per questionnaire
PELV1	801	PFIQ	1, 3	0	3	0-3 as per questionnaire
PELV2	802	PFIQ	1, 3	0	3	0-3 as per questionnaire
PELV3	803	PFIQ	1, 3	0	3	0-3 as per questionnaire
PELV4	804	PFIQ	1, 3	0	3	0-3 as per questionnaire
PELV5	805	PFIQ	1, 3	0	3	0-3 as per questionnaire
PELV6	806	PFIQ	1, 3	0	3	0-3 as per questionnaire
PELV7	807	PFIQ	1, 3	0	3	0-3 as per questionnaire

Table 15. Berzuk Indices of Pelvic Floor Dysfunction (BIOPFD)

INDEX	ID	GROUP	MIN	MAX	CALCULATION	DESCRIPTION
INTERV	110	DEMOG	0	5	SUM(D10.1:D10.5)	Total number of birthing interventions
PFK	351	PIKQ	0	100	100/24*SUM(KUI01:12,KPOP01:12)	Total Pelvic Floor Knowledge= Incontinence + POP
KUI	451	PIKQ	0	100	100/12*SUM(KUI01:12)	Pelvic Floor Knowledge re:Incontinence
KPOP	452	PIKQ	0	100	100/12*SUM(KPOP01:12)	Pelvic Floor Knowledge re: POP
PFDI	551	PFDI-20	0	100	AVE(POPDI, CRADI, UDI)	Dysfunction with bladder + bowel + pelvic organ support
UDI	552	PFDI-20	0	100	25*AVE(PFDI15:20)	Urinary Distress Inventory from PFDI-20
CRADI	553	PFDI-20	0	100	25*AVE(PFDI07:14)	Colo-rectal-anal Distress Inventory from PFDI-20
POPDI	554	PFDI-20	0	100	25*AVE(PFDI01:06)	Pelvic Organ Prolapse Distress Inventory from PFDI-20
PFDI-20W	555	PFDI-20(+2)	0	100	25*AVE(PFDI01:20)	Pelvic Floor Distress Inventory-20 20 items equally weighted
PFDI-20(+2)W	556	PFDI-20(+2)	0	100	25*AVE(PFDI01:22)	Pelvic Floor Distress Inventory-20(+2) 22 Items equally weighted
BladDysf	557	PFDI-20(+2)	0	100	25*AVE(PFDI05,06,15:19)	Domain Bladder Dysfunction
BowlDysf	558	PFDI-20(+2)	0	100	25*AVE(PFDI04,07:14)	Domain Bowel Dysfunction
POP	559	PFDI-20(+2)	0	100	25*AVE(PFDI01:06,14)	Domain Pelvic Organ Prolapse (POP)
Pelvic Pain	560	PFDI-20(+2)	0	100	25*AVE(PFDI12,20,21)	Domain Pelvic Pain
SEXUAL	561	PFDI-20(+2)	0	100	25*AVE(PFDI21:22)	Domain Sexual Dysfunction
ObstBlad	562	PFDI-20(+2)	0	100	25*AVE(PFDI05,06,19)	Obstructive Bladder Emptying (Bladder Dysfunction sub-category)
UrnFreq	563	PFDI-20(+2)	0	100	25*PFDI15	Dysfunctional Voiding Frequency (Bladder Dysfunction sub-category)
UI	564	PFDI-20(+2)	0	100	25*AVE(PFDI16:18)	Urinary Incontinence (Bladder Dysfunction sub-category)
SUI	565	PFDI-20(+2)	0	100	25*PFDI17	Stress Urinary Incontinence (Bladder Incontinence sub-category)
UUI	566	PFDI-20(+2)	0	100	25*PFDI16	Urgency Urinary Incontinence (Bladder Incontinence sub-category)
ObstBowl	567	PFDI-20(+2)	0	100	25*AVE(PFDI04,07,08)	Obstructive Bowel Emptying (Bowel Dysfunction sub-category)
BowlUrge	568	PFDI-20(+2)	0	100	25*PFDI13	Bowel Urgency (Bowel Dysfunction sub-category)
BowlIncnt	569	PFDI-20(+2)	0	100	25*AVE(PFDI09:11)	Bowel Incontinence (Bowel Dysfunction sub-category)
FI	570	PFDI-20(+2)	0	100	25*AVE(PFDI09,10)	Fecal Incontinence (Bowel Incontinence sub-category)
Flatual	571	PFDI-20(+2)	0	100	25*PFDI11	Flatual Incontinence (Bowel Incontinence sub-category)
PFIQ	651	PFIQ-7	0	100	100/3*AVE(BLAD1:7,BOWL1:7,PELVIS1:7)	Pelvic Floor Impact Questionnaire-7
UIQ	751	PFIQ-7	0	100	100/3*AVE(BLAD1:7)	Urinary Impact Questionnaire from PFIQ-7
CRAIQ	851	PFIQ-7	0	100	100/3*AVE(BOWL1:7)	Colo-rectal-anal Impact Questionnaire from PFIQ-7
POPIQ	861	PFIQ-7	0	100	100/3*AVE(PELVIS1:7)	Pelvic Organ Prolapse Impact Questionnaire from PFIQ-7
HavePFD	251	PFM	0	100	100*PFM1	Recognize the presence of PFD symptoms
PFMexK	252	PFM	0	100	100*PFM2	PFM exercise knowledge
PFMex	253	PFM	0	100	25*PFM3	PFM exercise commitment
PFMimp	254	PFM	0	100	25*PFM4	PFM exercise importance
PFMtot	256	PFM	0	100	(100*PFM2+25*PFM3+25*PFM4)/3	PFMtotal=PFMexercise Knowledge + Commitment +Importance
PFinfo	255	PF Info	0	100	100*PFM5	Sought Pelvic Floor Health Information

Table 16. Averaging PFDI-20 Items: Method 1 versus Method 2

Item	Data	POPDI	CRADI	UDI	PFDI-20 (Method1)	PFDI-20 (Method2)
PFDI01	0	58.33			58.68	57.50
PFDI02	4					
PFDI03	3					
PFDI04	3					
PFDI05	1					
PFDI06	3					
PFDI07	2		59.38			
PFDI08	4					
PFDI09	3					
PFDI10	0					
PFDI11	1					
PFDI12	3					
PFDI13	2					
PFDI14	4					
PFDI15	3			54.17		
PFDI16	0					
PFDI17	3					
PFDI18	3					
PFDI19	1					
PFDI20	3					

Table 17. Demographics of Participants

DEMOGRAPHIC VARIABLE	CHI SQUARE (Categorical data)	DF	PROBABILTIY
Age	1.3571	8	p=0.995
Education	18.2601	12	p=0.108
Marital Status	9.5702	8	p=0.296
Income	5.4394	8	p=0.710
Race	3.0937	8	p=0.928
Health	0.9313	4	p=0.920
Pregnancies	9.0960	10	p=0.523
Vaginal Deliveries	9.3404	10	p=0.500
Caesarean Sections	4.4769	6	p=0.612
Epidural	1.0071	2	p=0.604
Episiotomy	2.2668	2	p=0.322
Perineal Tear	0.1316	2	p=0.936
Vacuum	2.0969	2	p=0.350
Forceps	0.7659	2	p=0.682
Menstrual Stage	5.5611	8	p=0.696

Table 18. Total Birthing Interventions of Participants: ANOVA

PELVIC FLOOR HEALTH STUDY **By: Kelli Berzuk**

Index 110 INTERV

ANALYSIS OF VARIANCE

Source of Variation	DF	SS	MS	F	Significance
Groups	2	1.99	1.00	0.56	Not Significant
Error	142	251.90	1.77		
Total	144	253.89			

MEANS AND STANDARD ERRORS

Group	N	MEAN	S.E.
A	48	1.21	0.26
B	48	1.48	0.26
C	49	1.43	0.25
ALL	**145**	**1.37**	0.15

COMPARING TWO MEANS

MEANS WILL NOT BE COMPARED BECAUSE OF LACK OF SIGNIFICANCE

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Analysis by:
F.S. Chebib, Ph.D.

Table 19. PIKQ Results: Non-Parametric Testing

VARIABLE ANALYZED	GROUPS	TIME	TEST	PROBABILITY
PIKQ	A, B, C	Time 1	Kruskal-Wallis	p=0.461
PIKQ	**A, B, C**	**Time 2**	**Kruskal-Wallis**	**p<0.001**
PIKQ	A, B	Time 2	Mann-Whitney U	p=0.508
PIKQ	**A, C**	**Time 2**	**Mann-Whitney U**	**p<0.001 Group A > Group C**
PIKQ	**B, C**	**Time 2**	**Mann-Whitney U**	**p<0.001 Group B > Group C**
PIKQ	**A, B, C**	**Time 3**	**Kruskal-Wallis**	**p<0.001**
PIKQ	**A, B**	**Time 3**	**Mann-Whitney U**	**p<0.001 Group A > Group B**
PIKQ	**A, C**	**Time 3**	**Mann-Whitney U**	**p<0.001 Group A > Group C**
PIKQ	**B, C**	**Time 3**	**Mann-Whitney U**	**p<0.001 Group B > Group C**
PIKQ	**A, B, C**	**Time 1 versus Time 2**	**Wilcoxon Signed Rank**	**p<0.001 Time 2 > Time 1**
PIKQ	**A, B, C**	**Time 2 versus Time 3**	**Wilcoxon Signed Rank**	**p<0.001 Time 3 > Time 2**
PIKQ	**A, B, C**	**Time 1 versus Time 3**	**Wilcoxon Signed Rank**	**p<0.001 Time 3 > Time 1**

Table 19a. PIKQ-Incontinence Results: Non-Parametric Testing

VARIABLE ANALYZED	GROUPS	TIME	TEST	PROBABILITY
PIKQ-Incontinence	A, B, C	Time 1	Kruskal-Wallis	p=0.300
PIKQ-Incontinence	**A, B, C**	**Time 2**	**Kruskal-Wallis**	**p<0.001**
PIKQ-Incontinence	A, B	Time 2	Mann-Whitney U	p=0.591
PIKQI-Incontinence	**A, C**	**Time 2**	**Mann-Whitney U**	**p<0.001 Group A > Group C**
PIKQ-Incontinence	**B, C**	**Time 2**	**Mann-Whitney U**	**p<0.001 Group B > Group C**
PIKQ-Incontinence	**A, B, C**	**Time 3**	**Kruskal-Wallis**	**p<0.001**
PIKQ-Incontinence	**A, B**	**Time 3**	**Mann-Whitney U**	**p<0.001 Group A > Group B**
PIKQ-Incontinence	**A, C**	**Time 3**	**Mann-Whitney U**	**p<0.001 Group A > Group C**
PIKQ-Incontinence	**B, C**	**Time 3**	**Mann-Whitney U**	**p<0.001 Group B > Group C**
PIKQ-Incontinence	**A, B, C**	**Time 1 versus Time 2**	**Wilcoxon Signed Rank**	**p<0.001 Time 2 > Time 1**
PIKQ-Incontinence	A, B, C	Time 2 versus Time 3	Wilcoxon Signed Rank	p=0.362
PIKQ-Incontinence	**A, B, C**	**Time 1 versus Time 3**	**Wilcoxon Signed Rank**	**p<0.001 Time 3 > Time 1**

Table 19b. PIKQ-POP Results: Non-Parametric Testing

VARIABLE ANALYZED	GROUPS	TIME	TEST	PROBABILITY
PIKQ-POP	A, B, C	Time 1	Kruskal-Wallis	p=0.807
PIKQ-POP	**A, B, C**	**Time 2**	**Kruskal-Wallis**	**p<0.001**
PIKQ-POP	A, B	Time 2	Mann-Whitney U	p=0.259
PIKQ-POP	**A, C**	**Time 2**	**Mann-Whitney U**	**p<0.001 Group A > Group C**
PIKQ-POP	**B, C**	**Time 2**	**Mann-Whitney U**	**p<0.001 Group B > Group C**
PIKQ-POP	**A, B, C**	**Time 3**	**Kruskal-Wallis**	**p<0.001**
PIKQ-POP	**A, B**	**Time 3**	**Mann-Whitney U**	**p<0.001 Group A > Group B**
PIKQ-POP	**A, C**	**Time 3**	**Mann-Whitney U**	**p<0.001 Group A > Group C**
PIKQ-POP	**B, C**	**Time 3**	**Mann-Whitney U**	**p<0.001 Group B > Group C**
PIKQ-POP	**A, B, C**	**Time 1 versus Time 2**	**Wilcoxon Signed Rank**	**p<0.001 Time 2 > Time 1**
PIKQ-POP	**A, B, C**	**Time 2 versus Time 3**	**Wilcoxon Signed Rank**	**p<0.001 Time 3 > Time 2**
PIKQ-POP	**A, B, C**	**Time 1 versus Time 3**	**Wilcoxon Signed Rank**	**p<0.001 Time 3 > Time 1**

Table 20. PIKQ Results: ANOVA

Pelvic Floor Health Study **By: Kelli Berzuk**

INDEX 452 PIKQ (Prolapse Incontinence Knowledge Questionnaire-24 items)

SECTION 1 - ANOVA

NOTES:

Source of Variation	DF	SS	MS	F	Significance
Groups	2	77607	38803	66.48	Less than 0 .1%
Error 1	142	82885	584		
Total 1 (subjects)	144	160492	1115	6.36	Less than 0 .1%
Times	2	114269	57135	325.94	Less than 0 .1%
T x G	4	50075	12519	71.42	Less than 0 .1%
Error 2	284	49783	175		
TOTAL	**434**	**374619**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T2		T3		ALL	
	N	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.
A	48	41.15	1.91	82.99	1.91	99.22	1.91	74.45	2.01
B	48	38.46	1.91	83.51	1.91	90.63	1.91	70.86	2.01
C	49	43.37	1.89	41.67	1.89	48.72	1.89	44.59	1.99
ALL	**145**	**41.01**	**1.10**	**69.20**	**1.10**	**79.31**	**1.10**	**63.17**	**0.63**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (3 Groups, 284 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T2	T1	69.20	41.01	28.19	3.64	4.53	5.57	Less than 0 .1%
Between	T3	T1	79.31	41.01	38.30	3.64	4.53	5.57	Less than 0 .1%
Between	T3	T2	79.31	69.20	10.11	3.64	4.53	5.57	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	74.45	70.86	3.59	6.65	8.27	10.16	Not Significant
Between	G1	G3	74.45	44.59	29.86	6.65	8.27	10.16	Less than 0 .1%
Between	G2	G3	70.86	44.59	26.28	6.65	8.27	10.16	Less than 0 .1%

PART III - GROUP x TIME INTERACTION (9 Groups, 284 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T2	G1T1	82.99	41.15	41.84	8.35	9.67	11.24	Less than 0 .1%
Between	G1T3	G1T1	99.22	41.15	58.07	8.35	9.67	11.24	Less than 0 .1%
Between	G1T3	G1T2	99.22	82.99	16.23	8.35	9.67	11.24	Less than 0 .1%
Between	G2T2	G2T1	83.51	38.46	45.05	8.35	9.67	11.24	Less than 0 .1%
Between	G2T3	G2T1	90.63	38.46	52.17	8.35	9.67	11.24	Less than 0 .1%
Between	G2T3	G2T2	90.63	83.51	7.12	8.35	9.67	11.24	Not Significant
Between	G3T2	G3T1	41.67	43.37	1.70	8.35	9.67	11.24	Not Significant
Between	G3T3	G3T1	48.72	43.37	5.36	8.35	9.67	11.24	Not Significant
Between	G3T3	G3T2	48.72	41.67	7.06	8.35	9.67	11.24	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	41.15	38.46	2.69	8.35	9.67	11.24	Not Significant
Between	G1T1	G3T1	41.15	43.37	2.22	8.35	9.67	11.24	Not Significant
Between	G2T1	G3T1	38.46	43.37	4.91	8.35	9.67	11.24	Not Significant
Between	G1T2	G2T2	82.99	83.51	0.52	8.35	9.67	11.24	Not Significant
Between	G1T2	G3T2	82.99	41.67	41.32	8.35	9.67	11.24	Less than 0 .1%
Between	G2T2	G3T2	83.51	41.67	41.84	8.35	9.67	11.24	Less than 0 .1%
Between	G1T3	G2T3	99.22	90.63	8.59	8.35	9.67	11.24	Less than 5%
Between	G1T3	G3T3	99.22	48.72	50.49	8.35	9.67	11.24	Less than 0 .1%
Between	G2T3	G3T3	90.63	48.72	41.90	8.35	9.67	11.24	Less than 0 .1%

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Analysis by
F. S. Chebib, Ph. D

Table 20a. PIKQ-Incontinence Results: ANOVA

Pelvic Floor Health Study **By: Kelli Berzuk**

INDEX 351 PIKQ-Incontinence (12 Items)

SECTION 1 - ANOVA **NOTES:**

Source of Variation	DF	SS	MS	F	Significance
Groups	2	49863	24932	34.71	Less than 0 .1%
Error 1	142	101992	718		
Total 1 (subjects)	144	151855	1055	4.67	Less than 0 .1%
Times	2	79093	39546	175.30	Less than 0 .1%
T x G	4	38087	9522	42.21	Less than 0 .1%
Error 2	284	64067	226		
TOTAL	**434**	**333101**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T2		T3		ALL	
	N	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.
A	48	55.56	2.17	96.53	2.17	98.96	2.17	83.68	2.23
B	48	51.04	2.17	95.66	2.17	92.71	2.17	79.80	2.23
C	49	58.67	2.15	57.99	2.15	61.39	2.15	59.35	2.21
ALL	**145**	**55.12**	**1.25**	**83.22**	**1.25**	**84.20**	**1.25**	**74.18**	**0.72**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (3 Groups, 284 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T2	T1	83.22	55.12	28.10	4.13	5.14	6.32	Less than 0 .1%
Between	T3	T1	84.20	55.12	29.08	4.13	5.14	6.32	Less than 0 .1%
Between	T3	T2	84.20	83.22	0.98	4.13	5.14	6.32	Not Significant

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	83.68	79.80	3.88	7.38	9.17	11.27	Not Significant
Between	G1	G3	83.68	59.35	24.33	7.38	9.17	11.27	Less than 0 .1%
Between	G2	G3	79.80	59.35	20.45	7.38	9.17	11.27	Less than 0 .1%

PART III - GROUP x TIME INTERACTION (9 Groups, 284 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T2	G1T1	96.53	55.56	40.97	9.48	10.97	12.75	Less than 0 .1%
Between	G1T3	G1T1	98.96	55.56	43.40	9.48	10.97	12.75	Less than 0 .1%
Between	G1T3	G1T2	98.96	96.53	2.43	9.48	10.97	12.75	Not Significant
Between	G2T2	G2T1	95.66	51.04	44.62	9.48	10.97	12.75	Less than 0 .1%
Between	G2T3	G2T1	92.71	51.04	41.67	9.48	10.97	12.75	Less than 0 .1%
Between	G2T3	G2T2	92.71	95.66	2.95	9.48	10.97	12.75	Not Significant
Between	G3T2	G3T1	57.99	58.67	0.68	9.48	10.97	12.75	Not Significant
Between	G3T3	G3T1	61.39	58.67	2.72	9.48	10.97	12.75	Not Significant
Between	G3T3	G3T2	61.39	57.99	3.40	9.48	10.97	12.75	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	55.56	51.04	4.51	9.48	10.97	12.75	Not Significant
Between	G1T1	G3T1	55.56	58.67	3.12	9.48	10.97	12.75	Not Significant
Between	G2T1	G3T1	51.04	58.67	7.63	9.48	10.97	12.75	Not Significant
Between	G1T2	G2T2	96.53	95.66	0.87	9.48	10.97	12.75	Not Significant
Between	G1T2	G3T2	96.53	57.99	38.53	9.48	10.97	12.75	Less than 0 .1%
Between	G2T2	G3T2	95.66	57.99	37.67	9.48	10.97	12.75	Less than 0 .1%
Between	G1T3	G2T3	98.96	92.71	6.25	9.48	10.97	12.75	Not Significant
Between	G1T3	G3T3	98.96	61.39	37.56	9.48	10.97	12.75	Less than 0 .1%
Between	G2T3	G3T3	92.71	61.39	31.31	9.48	10.97	12.75	Less than 0 .1%

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Analysis by
F. S. Chebib, Ph. D

Table 20b. PIKQ-POP Results: ANOVA

Pelvic Floor Health Study **By: Kelli Berzuk**

INDEX 451 PIKQ-POP (12 items)

SECTION 1 - ANOVA

NOTES:

Source of Variation	DF	SS	MS	F	Significance
Groups	2	111645	55823	75.54	Less than 0 .1%
Error 1	142	104936	739		
Total 1 (subjects)	144	216581	1504	5.89	Less than 0 .1%
Times	2	165741	82871	324.67	Less than 0 .1%
T x G	4	66252	16563	64.89	Less than 0 .1%
Error 2	284	72490	255		
TOTAL	**434**	**521064**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T2		T3		ALL	
	N	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.
A	48	26.74	2.31	69.44	2.31	99.48	2.31	65.22	2.27
B	48	25.87	2.31	71.35	2.31	88.54	2.31	61.92	2.27
C	49	28.06	2.28	25.34	2.28	36.06	2.28	29.82	2.24
ALL	**145**	**26.90**	**1.33**	**55.17**	**1.33**	**74.43**	**1.33**	**52.17**	**0.77**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (3 Groups, 284 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T2	T1	55.17	26.90	28.28	4.40	5.47	6.72	Less than 0 .1%
Between	T3	T1	74.43	26.90	47.53	4.40	5.47	6.72	Less than 0 .1%
Between	T3	T2	74.43	55.17	19.25	4.40	5.47	6.72	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	65.22	61.92	3.30	7.48	9.30	11.43	Not Significant
Between	G1	G3	65.22	29.82	35.40	7.48	9.30	11.43	Less than 0 .1%
Between	G2	G3	61.92	29.82	32.10	7.48	9.30	11.43	Less than 0 .1%

PART III - GROUP x TIME INTERACTION (9 Groups, 284 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T2	G1T1	69.44	26.74	42.71	10.08	11.67	13.57	Less than 0 .1%
Between	G1T3	G1T1	99.48	26.74	72.74	10.08	11.67	13.57	Less than 0 .1%
Between	G1T3	G1T2	99.48	69.44	30.03	10.08	11.67	13.57	Less than 0 .1%
Between	G2T2	G2T1	71.35	25.87	45.49	10.08	11.67	13.57	Less than 0 .1%
Between	G2T3	G2T1	88.54	25.87	62.67	10.08	11.67	13.57	Less than 0 .1%
Between	G2T3	G2T2	88.54	71.35	17.19	10.08	11.67	13.57	Less than 0 .1%
Between	G3T2	G3T1	25.34	28.06	2.72	10.08	11.67	13.57	Not Significant
Between	G3T3	G3T1	36.06	28.06	7.99	10.08	11.67	13.57	Not Significant
Between	G3T3	G3T2	36.06	25.34	10.71	10.08	11.67	13.57	Less than 5%

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	26.74	25.87	0.87	10.08	11.67	13.57	Not Significant
Between	G1T1	G3T1	26.74	28.06	1.33	10.08	11.67	13.57	Not Significant
Between	G2T1	G3T1	25.87	28.06	2.19	10.08	11.67	13.57	Not Significant
Between	G1T2	G2T2	69.44	71.35	1.91	10.08	11.67	13.57	Not Significant
Between	G1T2	G3T2	69.44	25.34	44.10	10.08	11.67	13.57	Less than 0 .1%
Between	G2T2	G3T2	71.35	25.34	46.01	10.08	11.67	13.57	Less than 0 .1%
Between	G1T3	G2T3	99.48	88.54	10.94	10.08	11.67	13.57	Less than 5%
Between	G1T3	G3T3	99.48	36.06	63.42	10.08	11.67	13.57	Less than 0 .1%
Between	G2T3	G3T3	88.54	36.06	52.49	10.08	11.67	13.57	Less than 0 .1%

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Analysis by
F. S. Chebib, Ph. D

Table 21a. PIKQ-Incontinence Results: Descriptive Analysis

PIKQ-INCONTINENCE ITEMS (Correct Response)	GROUP	TIME 1 (%)	TIME 1 TOTAL (%)	TIME 3 (%)
1. Urinary incontinence (loss of urine or leaky bladder) is more common in young women than in old women. (Disagree)	A	34 (71)	97 (67)	48 (100)
	B	30 (63)		44 (92)
	C	33 (67)		29 (20)
2. Women are more likely than men to leak urine. (Agree)	A	31 (65)	97 (67)	48 (100)
	B	33 (69)		43 (90)
	C	33 (67)		28 (57)
3. Other than pads and diapers, not much can be done to treat leakage of urine. (Disagree)	A	28 (58)	88 (61)	48 (100)
	B	28 (58)		47 (98)
	C	32 (65)		34 (69)
4. It is NOT important to diagnose the type of urine leakage before trying to treat it. ((Disagree)	A	40 (83)	109 (75)	44 (92)
	B	35 (73)		43 (90)
	C	34 (69)		35 (71)
5. Many things can cause urine leakage. (Agree)	A	26 (54)	84 (58)	47 (98)
	B	23 (48)		45 (94)
	C	35 (71)		35 (71)
6. Certain exercises can be done to help to control urine leakage. (Agree)	A	34 (71)	106 (73)	48 (100)
	B	35 (73)		48 (100)
	C	37 (76)		39 (80)
7. Some medications may cause urinary leakage. (Agree)	A	13 (27)	36 (25)	48 (100)
	B	12 (25)		37 (77)
	C	11 (22)		12 (24)
8. Once people start to leak urine, they are never able to control their urine again. (Disagree)	A	25 (52)	75 (52)	48 (100)
	B	20 (42)		47 (98)
	C	30 (61)		33 (67)
9. Doctors can do special types of bladder testing to diagnose urine leakage. (Agree)	A	8 (17)	37 (26)	47 (98)
	B	12 (25)		38 (79)
	C	17 (35)		19 (39)
10. Surgery is the only treatment for urinary leakage. (Disagree)	A	25 (52)	71 (49)	48 (100)
	B	20 (42)		48 (100)
	C	26 (53)		27 (55)
11. Giving birth many times may lead to urine leakage. (Agree)	A	32 (67)	91 (63)	48 (100)
	B	26 (54)		48 (100)
	C	33 (67)		38 (78)
12. Most people who leak urine can be cured or improved with some kind of treatment. (Agree)	A	24 (50)	68 (47)	48 (100)
	B	20 (42)		47 (98)
	C	24 (49)		32 (65)
TOTAL	A	320 (56)	959 (55)	570 (99)
	B	294 (51)		534 (93)
	C	345 (59)		361 (61)

Table 21b. PIKQ-POP Results: Descriptive Analysis

PIKQ-POP ITEMS (Correct Response)	GROUP	TIME 1 (%)	TIME 1 TOTAL (%)	TIME 3 (%)
1. Pelvic organ prolapse (bulging of the vagina, uterus, bladder, or rectum) is more common in young women than in old women. (Disagree)	A	12 (25)	32 (22)	47 (98)
	B	12 (25)		42 (88)
	C	8 (16)		15 (31)
2. Giving birth many times may lead to pelvic organ prolapse. (Agree)	A	19 (40)	52 (36)	48 (100)
	B	16 (33)		47 (98)
	C	17 (35)		23 (47)
3. Pelvic organ prolapse can happen at any age. (Agree)	A	18 (38)	54 (37)	48 (100)
	B	18 (38)		47 (98)
	C	18 (37)		16 (33)
4. Certain exercises can help to stop pelvic organ prolapse from getting worse. (Agree)	A	16 (33)	51 (35)	48 (100)
	B	16 (33)		46 (96)
	C	19 (39)		14 (29)
5. Symptoms of pelvic organ prolapse may include pelvic heaviness and/or pressure. (Agree)	A	14 (29)	39 (27)	48 (100)
	B	12 (25)		48 (100)
	C	13 (27)		21 (43)
6. A good way for a doctor to diagnose pelvic organ prolapse is by examining the patient. (Agree)	A	26 (54)	80 (55)	48 (100)
	B	22 (46)		47 (98)
	C	32 (65)		31 (63)
7. Once a patient has pelvic organ prolapse, not much can be done to help her. (Disagree)	A	13 (27)	40 (28)	48 (100)
	B	11 (23)		45 (94)
	C	16 (33)		22 (45)
8. Heavy lifting on a daily basis can lead to pelvic organ prolapse. (Agree)	A	6 (13)	16 (11)	48 (100)
	B	6 (13)		37 (77)
	C	4 (8)		12 (24)
9. Surgery is one type of treatment for pelvic organ prolapse. (Agree)	A	17 (35)	55 (40)	48 (100)
	B	18 (38)		44 (92)
	C	20 (41)		29 (59)
10. Doctors can run a blood test to diagnose pelvic organ prolapse. (Disagree)	A	3 (6)	13 (9)	48 (100)
	B	5 (10)		31 (65)
	C	5 (10)		5 (10)
11. A rubber ring called a pessary can be used to treat symptoms of pelvic organ prolapse. (Agree)	A	1 (2)	10 (7)	47 (98)
	B	5 (10)		45 (94)
	C	4 (8)		12 (24)
12. People who are obese are less likely to get pelvic organ prolapse. (Disagree)	A	9 (19)	26 (18)	47 (98)
	B	8 (17)		31 (65)
	C	9 (18)		12 (24)
TOTAL	A	154 (27)	468 (27)	573 (99)
	B	149 (26)		510 (89)
	C	165 (28)		212 (36)

Table 22. PFDI-20(+2): Validating PFD Domains: Cronbach's Alpha

PFD DOMAINS	PFDI ITEMS	TEST USED	RESULT at Time 1	RESULT at Time 3
BLADDER DYSFUNCTION	PFDI05 PFDI06 PFDI15 PFDI16 PFDI17 PFDI18 FPDI19	Cronbach Coefficient Alpha	Raw Alpha=0.756822 (0.768181 with PFDI06 deletion)	Raw Alpha=0.795831 (0.820349 with PFDI06 deletion)
BOWEL DYSFUNCTION	PFDI04 PFDI07 PFDI08 PFDI09 PFDI10 PFDI11 PFDI12 PFDI13 PFDI14	Cronbach Coefficient Alpha	Raw Alpha=0.821889 (0.822095 with PFDI09 deletion)	Raw Alpha=0.826119 (0.844376 with PFDI09 deletion)
PELVIC ORGAN PROLAPSE (POP)	PFDI01 PFDI02 PFDI03 PFDI04 PFDI05 PFDI06 PFDI14	Cronbach Coefficient Alpha	Raw Alpha=0.706976 (0.719134 with PFDI05 deletion)	Raw Alpha=0.800004 (0.815835 with PFDI06 deletion)
PELVIC PAIN	PFDI12 PFDI20 PFDI21	Cronbach Coefficient Alpha	Raw Alpha=0.530687 (0.568292 with PFDI12 deletion)	Raw Alpha=0.588721
SEXUAL DYSFUNCTION	PFDI21 PFDI22	Polychoric Correlation (ordinal data)	Value=0.5373	Value=0.6413

Table 23. PFDI-20 (Pelvic Floor Distress Inventory): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	555	PFDI-20 (Pelvic Floor Distress Inventory)

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	1776	888	2.61	Not Significant
Error 1	142	48292	340		
Total 1 (subjects)	144	50068	348	6.55	Less than 0 .1%
Times	1	3142	3142	59.15	Less than 0 .1%
T x G	2	1825	912	17.18	Less than 0 .1%
Error 2	142	7542	53		
TOTAL	**289**	**62577**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	17.98	1.05	6.00	1.05	11.99	1.88
B	48	16.21	1.05	8.25	1.05	12.23	1.88
C	49	17.31	1.04	17.37	1.04	17.34	1.86
ALL	**145**	**17.17**	**0.61**	**10.59**	**0.61**	**13.88**	**0.86**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	10.59	17.17	6.58	1.68	2.20	2.82	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	11.99	12.23	0.24	6.22	7.73	9.50	Not Significant
Between	G1	G3	11.99	17.34	5.35	6.22	7.73	9.50	Not Significant
Between	G2	G3	12.23	17.34	5.11	6.22	7.73	9.50	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	6.00	17.98	11.98	4.22	4.99	5.89	Less than 0 .1%
Between	G2T3	G2T1	8.25	16.21	7.96	4.22	4.99	5.89	Less than 0 .1%
Between	G3T3	G3T1	17.37	17.31	0.06	4.22	4.99	5.89	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	17.98	16.21	1.77	4.22	4.99	5.89	Not Significant
Between	G1T1	G3T1	17.98	17.31	0.67	4.22	4.99	5.89	Not Significant
Between	G2T1	G3T1	16.21	17.31	1.10	4.22	4.99	5.89	Not Significant
Between	G1T3	G2T3	6.00	8.25	2.24	4.22	4.99	5.89	Not Significant
Between	G1T3	G3T3	6.00	17.37	11.36	4.22	4.99	5.89	Less than 0 .1%
Between	G2T3	G3T3	8.25	17.37	9.12	4.22	4.99	5.89	Less than 0 .1%

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Analysis by:
F.S. Chebib, Ph.D.

Table 23a. UDI (Bladder Dysfunction Domain from PFDI-20): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	553	UDI (Bladder Dysfunction Domain from PFDI-20)

SECTION 1 - ANOVA

Source of Variation	DF	SS	MS	F	Significance
Groups	2	761	380	0.61	Not Significant
Error 1	142	87996	620		
Total 1 (subjects)	144	88757	616	5.25	Less than 0 .1%
Times	1	4593	4593	39.11	Less than 0 .1%
T x G	2	2766	1383	11.78	Less than 0 .1%
Error 2	142	16677	117		
TOTAL	**289**	**112793**			

Notes

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	23.61	1.56	9.29	1.56	16.45	2.54
B	48	22.14	1.56	12.07	1.56	17.10	2.54
C	49	19.98	1.55	20.32	1.55	20.15	2.51
ALL	**145**	**21.90**	**0.90**	**13.94**	**0.90**	**17.92**	**1.27**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	13.94	21.90	7.96	2.49	3.28	4.19	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	16.45	17.10	0.65	8.39	10.43	12.82	Not Significant
Between	G1	G3	16.45	20.15	3.70	8.39	10.43	12.82	Not Significant
Between	G2	G3	17.10	20.15	3.05	8.39	10.43	12.82	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	9.29	23.61	14.32	6.28	7.42	8.76	Less than 0 .1%
Between	G2T3	G2T1	12.07	22.14	10.07	6.28	7.42	8.76	Less than 0 .1%
Between	G3T3	G3T1	20.32	19.98	0.34	6.28	7.42	8.76	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	23.61	22.14	1.48	6.28	7.42	8.76	Not Significant
Between	G1T1	G3T1	23.61	19.98	3.63	6.28	7.42	8.76	Not Significant
Between	G2T1	G3T1	22.14	19.98	2.15	6.28	7.42	8.76	Not Significant
Between	G1T3	G2T3	9.29	12.07	2.78	6.28	7.42	8.76	Not Significant
Between	G1T3	G3T3	9.29	20.32	11.03	6.28	7.42	8.76	Less than 0 .1%
Between	G2T3	G3T3	12.07	20.32	8.26	6.28	7.42	8.76	Less than 1%

Analysis by:
F.S. Chebib, Ph.D.

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Table 23b. CRADI (Bowel Domain from PFDI-20): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	552	CRADI (Bowel Domain from PFDI-20)

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	4310	2155	4.34	Less than 5%
Error 1	142	70573	497		
Total 1 (subjects)	144	74883	520	6.49	Less than 0 .1%
Times	1	3341	3341	41.70	Less than 0 .1%
T x G	2	1066	533	6.65	Less than 1%
Error 2	142	11379	80		
TOTAL	**289**	**90669**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	16.28	1.29	5.86	1.29	11.07	2.28
B	48	15.82	1.29	7.29	1.29	11.56	2.28
C	49	20.22	1.28	18.69	1.28	19.45	2.25
ALL	**145**	**17.46**	**0.74**	**10.67**	**0.74**	**14.06**	**1.05**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	10.67	17.46	6.79	2.06	2.71	3.46	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	11.07	11.56	0.49	7.51	9.34	11.48	Not Significant
Between	G1	G3	11.07	19.45	8.38	7.51	9.34	11.48	Less than 5%
Between	G2	G3	11.56	19.45	7.90	7.51	9.34	11.48	Less than 5%

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	5.86	16.28	10.42	5.19	6.13	7.24	Less than 1%
Between	G2T3	G2T1	7.29	15.82	8.53	5.19	6.13	7.24	Less than 1%
Between	G3T3	G3T1	18.69	20.22	1.53	5.19	6.13	7.24	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	16.28	15.82	0.46	5.19	6.13	7.24	Not Significant
Between	G1T1	G3T1	16.28	20.22	3.94	5.19	6.13	7.24	Not Significant
Between	G2T1	G3T1	15.82	20.22	4.40	5.19	6.13	7.24	Not Significant
Between	G1T3	G2T3	5.86	7.29	1.43	5.19	6.13	7.24	Not Significant
Between	G1T3	G3T3	5.86	18.69	12.83	5.19	6.13	7.24	Less than 1%
Between	G2T3	G3T3	7.29	18.69	11.39	5.19	6.13	7.24	Less than 1%

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Analysis by:
F.S. Chebib, Ph.D.

Table 23c. POPDI (POP Domain from PFDI-20): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	551	POPDI (POP Domain from PFDI-20)

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	1136	568	1.82	Not Significant
Error 1	142	44260	312		
Total 1 (subjects)	144	45396	315	4.71	Less than 0 .1%
Times	1	1812	1812	27.09	Less than 0 .1%
T x G	2	1915	958	14.31	Less than 0 .1%
Error 2	142	9501	67		
TOTAL	**289**	**58625**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	14.06	1.18	2.86	1.18	8.46	1.80
B	48	10.68	1.18	5.38	1.18	8.03	1.80
C	49	11.73	1.17	13.10	1.17	12.41	1.78
ALL	**145**	**12.16**	**0.68**	**7.16**	**0.68**	**9.66**	**0.96**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	7.16	12.16	5.00	1.88	2.47	3.16	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	8.46	8.03	0.43	5.95	7.40	9.09	Not Significant
Between	G1	G3	8.46	12.41	3.95	5.95	7.40	9.09	Not Significant
Between	G2	G3	8.03	12.41	4.39	5.95	7.40	9.09	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	2.86	14.06	11.20	4.74	5.60	6.61	Less than 0 .1%
Between	G2T3	G2T1	5.38	10.68	5.30	4.74	5.60	6.61	Less than 5%
Between	G3T3	G3T1	13.10	11.73	1.36	4.74	5.60	6.61	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	14.06	10.68	3.39	4.74	5.60	6.61	Not Significant
Between	G1T1	G3T1	14.06	11.73	2.33	4.74	5.60	6.61	Not Significant
Between	G2T1	G3T1	10.68	11.73	1.06	4.74	5.60	6.61	Not Significant
Between	G1T3	G2T3	2.86	5.38	2.52	4.74	5.60	6.61	Not Significant
Between	G1T3	G3T3	2.86	13.10	10.23	4.74	5.60	6.61	Less than 0 .1%
Between	G2T3	G3T3	5.38	13.10	7.71	4.74	5.60	6.61	Less than 0 .1%

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Analysis by:
F.S. Chebib, Ph.D.

Table 24. PFDI-20 Weighted: ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	556	PFDI-20 Weighted

Notes

SECTION 1 - ANOVA

Source of Variation	DF	SS	MS	F	Significance
Groups	2	1980	990	2.90	Not Significant
Error 1	142	48523	342		
Total 1 (subjects)	144	50503	351	6.64	Less than 0 .1%
Times	1	3161	3161	59.85	Less than 0 .1%
T x G	2	1738	869	16.45	Less than 0 .1%
Error 2	142	7501	53		
TOTAL	**289**	**62903**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	17.81	1.05	5.99	1.05	11.90	1.89
B	48	16.17	1.05	8.15	1.05	12.16	1.89
C	49	17.60	1.04	17.50	1.04	17.55	1.87
ALL	**145**	**17.20**	**0.60**	**10.59**	**0.60**	**13.90**	**0.85**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	10.59	17.20	6.60	1.67	2.20	2.81	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	11.90	12.16	0.26	6.23	7.75	9.52	Not Significant
Between	G1	G3	11.90	17.55	5.65	6.23	7.75	9.52	Not Significant
Between	G2	G3	12.16	17.55	5.39	6.23	7.75	9.52	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	5.99	17.81	11.82	4.21	4.97	5.87	Less than 0 .1%
Between	G2T3	G2T1	8.15	16.17	8.02	4.21	4.97	5.87	Less than 0 .1%
Between	G3T3	G3T1	17.50	17.60	0.10	4.21	4.97	5.87	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	17.81	16.17	1.64	4.21	4.97	5.87	Not Significant
Between	G1T1	G3T1	17.81	17.60	0.21	4.21	4.97	5.87	Not Significant
Between	G2T1	G3T1	16.17	17.60	1.43	4.21	4.97	5.87	Not Significant
Between	G1T3	G2T3	5.99	8.15	2.16	4.21	4.97	5.87	Not Significant
Between	G1T3	G3T3	5.99	17.50	11.51	4.21	4.97	5.87	Less than 0 .1%
Between	G2T3	G3T3	8.15	17.50	9.35	4.21	4.97	5.87	Less than 0 .1%

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Analysis by:
F.S. Chebib, Ph.D.

Table 25. PFDI-20(+2): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	557	PFDI-20(+2)

Notes

SECTION 1 - ANOVA

Source of Variation	DF	SS	MS	F	Significance
Groups	2	2150	1075	3.17	Less than 5%
Error 1	142	48092	339		
Total 1 (subjects)	144	50243	349	7.03	Less than 0 .1%
Times	1	3363	3363	67.76	Less than 0 .1%
T x G	2	1828	914	18.42	Less than 0 .1%
Error 2	142	7046	50		
TOTAL	**289**	**62480**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	18.96	1.02	7.15	1.02	13.06	1.88
B	48	17.52	1.02	8.76	1.02	13.14	1.88
C	49	18.85	1.01	18.85	1.01	18.85	1.86
ALL	**145**	**18.45**	**0.58**	**11.64**	**0.58**	**15.04**	**0.83**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	11.64	18.45	6.81	1.62	2.13	2.72	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	13.06	13.14	0.08	6.20	7.71	9.48	Not Significant
Between	G1	G3	13.06	18.85	5.80	6.20	7.71	9.48	Not Significant
Between	G2	G3	13.14	18.85	5.72	6.20	7.71	9.48	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	7.15	18.96	11.81	4.08	4.82	5.69	Less than 0 .1%
Between	G2T3	G2T1	8.76	17.52	8.76	4.08	4.82	5.69	Less than 0 .1%
Between	G3T3	G3T1	18.85	18.85	0.00	4.08	4.82	5.69	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	18.96	17.52	1.44	4.08	4.82	5.69	Not Significant
Between	G1T1	G3T1	18.96	18.85	0.11	4.08	4.82	5.69	Not Significant
Between	G2T1	G3T1	17.52	18.85	1.34	4.08	4.82	5.69	Not Significant
Between	G1T3	G2T3	7.15	8.76	1.61	4.08	4.82	5.69	Not Significant
Between	G1T3	G3T3	7.15	18.85	11.70	4.08	4.82	5.69	Less than 0 .1%
Between	G2T3	G3T3	8.76	18.85	10.09	4.08	4.82	5.69	Less than 0 .1%

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Analysis by:
F.S. Chebib, Ph.D.

Table 25a. Domain Bladder Dysfunction from PFDI-20(+2): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	560	Domain Bladder Dysfunction from PFDI-20(+2)

SECTION 1 - ANOVA

Source of Variation	DF	SS	MS	F	Significance
Groups	2	880	440	0.80	Not Significant
Error 1	142	78167	550		
Total 1 (subjects)	144	79048	549	5.62	Less than 0 .1%
Times	1	4011	4011	41.09	Less than 0 .1%
T x G	2	3491	1745	17.88	Less than 0 .1%
Error 2	142	13862	98		
TOTAL	**289**	**100413**			

Notes

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	N	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.
A	48	22.62	1.43	7.22	1.43	14.92	2.39
B	48	19.64	1.43	11.09	1.43	15.36	2.39
C	49	18.08	1.41	19.53	1.41	18.80	2.37
ALL	**145**	**20.10**	**0.82**	**12.66**	**0.82**	**16.38**	**1.16**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	12.66	20.10	7.44	2.27	2.99	3.82	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	14.92	15.36	0.45	7.91	9.83	12.08	Not Significant
Between	G1	G3	14.92	18.80	3.89	7.91	9.83	12.08	Not Significant
Between	G2	G3	15.36	18.80	3.44	7.91	9.83	12.08	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	7.22	22.62	15.40	5.73	6.76	7.99	Less than 0 .1%
Between	G2T3	G2T1	11.09	19.64	8.56	5.73	6.76	7.99	Less than 0 .1%
Between	G3T3	G3T1	19.53	18.08	1.46	5.73	6.76	7.99	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	22.62	19.64	2.98	5.73	6.76	7.99	Not Significant
Between	G1T1	G3T1	22.62	18.08	4.54	5.73	6.76	7.99	Not Significant
Between	G2T1	G3T1	19.64	18.08	1.57	5.73	6.76	7.99	Not Significant
Between	G1T3	G2T3	7.22	11.09	3.87	5.73	6.76	7.99	Not Significant
Between	G1T3	G3T3	7.22	19.53	12.32	5.73	6.76	7.99	Less than 0 .1%
Between	G2T3	G3T3	11.09	19.53	8.45	5.73	6.76	7.99	Less than 0 .1%

Analysis by:
F.S. Chebib, Ph.D.

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Table 25a-i. Bladder Obstruction: ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	562	Bladder Obstruction

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	1275	637	1.64	Not Significant
Error 1	142	55345	390		
Total 1 (subjects)	144	56620	393	3.72	Less than 0 .1%
Times	1	1854	1854	17.54	Less than 0 .1%
T x G	2	2575	1288	12.18	Less than 0 .1%
Error 2	142	15015	106		
TOTAL	**289**	**76064**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	13.89	1.48	1.22	1.48	7.55	2.01
B	48	9.20	1.48	4.69	1.48	6.94	2.01
C	49	10.71	1.47	12.59	1.47	11.65	1.99
ALL	**145**	**11.26**	**0.85**	**6.21**	**0.85**	**8.74**	**1.21**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	6.21	11.26	5.06	2.37	3.11	3.97	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	7.55	6.94	0.61	6.65	8.27	10.17	Not Significant
Between	G1	G3	7.55	11.65	4.10	6.65	8.27	10.17	Not Significant
Between	G2	G3	6.94	11.65	4.71	6.65	8.27	10.17	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	1.22	13.89	12.67	5.96	7.04	8.31	Less than 0 .1%
Between	G2T3	G2T1	4.69	9.20	4.51	5.96	7.04	8.31	Not Significant
Between	G3T3	G3T1	12.59	10.71	1.87	5.96	7.04	8.31	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	13.89	9.20	4.69	5.96	7.04	8.31	Not Significant
Between	G1T1	G3T1	13.89	10.71	3.17	5.96	7.04	8.31	Not Significant
Between	G2T1	G3T1	9.20	10.71	1.51	5.96	7.04	8.31	Not Significant
Between	G1T3	G2T3	1.22	4.69	3.47	5.96	7.04	8.31	Not Significant
Between	G1T3	G3T3	1.22	12.59	11.37	5.96	7.04	8.31	Less than 0 .1%
Between	G2T3	G3T3	4.69	12.59	7.90	5.96	7.04	8.31	Less than 1%

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Analysis by:
F.S. Chebib, Ph.D.

Table 25a-ii. Urinary Frequency: ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	563	Urinary Frequency

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	1142	571	0.38	Not Significant
Error 1	142	211035	1486		
Total 1 (subjects)	144	212177	1473	4.03	Less than 0 .1%
Times	1	8284	8284	22.68	Less than 0 .1%
T x G	2	9225	4613	12.63	Less than 0 .1%
Error 2	142	51865	365		
TOTAL	**289**	**281552**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	31.25	2.76	6.25	2.76	18.75	3.93
B	48	27.60	2.76	17.71	2.76	22.66	3.93
C	49	21.94	2.73	24.49	2.73	23.21	3.89
ALL	**145**	**26.90**	**1.59**	**16.21**	**1.59**	**21.55**	**2.24**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	16.21	26.90	10.69	4.40	5.78	7.39	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	18.75	22.66	3.91	12.99	16.16	19.85	Not Significant
Between	G1	G3	18.75	23.21	4.46	12.99	16.16	19.85	Not Significant
Between	G2	G3	22.66	23.21	0.56	12.99	16.16	19.85	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	6.25	31.25	25.00	11.08	13.08	15.45	Less than 0 .1%
Between	G2T3	G2T1	17.71	27.60	9.90	11.08	13.08	15.45	Not Significant
Between	G3T3	G3T1	24.49	21.94	2.55	11.08	13.08	15.45	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	31.25	27.60	3.65	11.08	13.08	15.45	Not Significant
Between	G1T1	G3T1	31.25	21.94	9.31	11.08	13.08	15.45	Not Significant
Between	G2T1	G3T1	27.60	21.94	5.67	11.08	13.08	15.45	Not Significant
Between	G1T3	G2T3	6.25	17.71	11.46	11.08	13.08	15.45	Less than 5%
Between	G1T3	G3T3	6.25	24.49	18.24	11.08	13.08	15.45	Less than 0 .1%
Between	G2T3	G3T3	17.71	24.49	6.78	11.08	13.08	15.45	Not Significant

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Analysis by:
F.S. Chebib, Ph.D.

Table 25a-iii. Urinary Incontinence (Stress + Urgency): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	564	Urinary Incontinence (Stress + Urgency)

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	716	358	0.31	Not Significant
Error 1	142	162932	1147		
Total 1 (subjects)	144	163648	1136	5.09	Less than 0 .1%
Times	1	5533	5533	24.77	Less than 0 .1%
T x G	2	3373	1687	7.55	Less than 0 .1%
Error 2	142	31719	223		
TOTAL	**289**	**204273**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	28.47	2.16	13.54	2.16	21.01	3.46
B	48	27.43	2.16	15.28	2.16	21.35	3.46
C	49	24.15	2.14	24.83	2.14	24.49	3.42
ALL	**145**	**26.67**	**1.24**	**17.93**	**1.24**	**22.30**	**1.76**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	17.93	26.67	8.74	3.44	4.52	5.78	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	21.01	21.35	0.35	11.42	14.20	17.44	Not Significant
Between	G1	G3	21.01	24.49	3.48	11.42	14.20	17.44	Not Significant
Between	G2	G3	21.35	24.49	3.14	11.42	14.20	17.44	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	13.54	28.47	14.93	8.66	10.23	12.08	Less than 0 .1%
Between	G2T3	G2T1	15.28	27.43	12.15	8.66	10.23	12.08	Less than 0 .1%
Between	G3T3	G3T1	24.83	24.15	0.68	8.66	10.23	12.08	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	28.47	27.43	1.04	8.66	10.23	12.08	Not Significant
Between	G1T1	G3T1	28.47	24.15	4.32	8.66	10.23	12.08	Not Significant
Between	G2T1	G3T1	27.43	24.15	3.28	8.66	10.23	12.08	Not Significant
Between	G1T3	G2T3	13.54	15.28	1.74	8.66	10.23	12.08	Not Significant
Between	G1T3	G3T3	13.54	24.83	11.29	8.66	10.23	12.08	Less than 1%
Between	G2T3	G3T3	15.28	24.83	9.55	8.66	10.23	12.08	Less than 5%

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Analysis by:
F.S. Chebib, Ph.D.

Table 25a-iii-i. Stress Urinary Incontinence: ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	565	Stress Urinary Incontinence

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	869	434	0.23	Not Significant
Error 1	142	273269	1924		
Total 1 (subjects)	144	274138	1904	4.79	Less than 0 .1%
Times	1	8828	8828	22.22	Less than 0 .1%
T x G	2	3502	1751	4.41	Less than 5%
Error 2	142	56420	397		
TOTAL	**289**	**342888**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	32.29	2.88	18.23	2.88	25.26	4.48
B	48	38.02	2.88	20.31	2.88	29.17	4.48
C	49	26.53	2.85	25.00	2.85	25.77	4.43
ALL	**145**	**32.24**	**1.66**	**21.21**	**1.66**	**26.72**	**2.34**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	21.21	32.24	11.03	4.59	6.03	7.70	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	25.26	29.17	3.91	14.79	18.38	22.59	Not Significant
Between	G1	G3	25.26	25.77	0.50	14.79	18.38	22.59	Not Significant
Between	G2	G3	29.17	25.77	3.40	14.79	18.38	22.59	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	18.23	32.29	14.06	11.56	13.64	16.11	Less than 5%
Between	G2T3	G2T1	20.31	38.02	17.71	11.56	13.64	16.11	Less than 5%
Between	G3T3	G3T1	25.00	26.53	1.53	11.56	13.64	16.11	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	32.29	38.02	5.73	11.56	13.64	16.11	Not Significant
Between	G1T1	G3T1	32.29	26.53	5.76	11.56	13.64	16.11	Not Significant
Between	G2T1	G3T1	38.02	26.53	11.49	11.56	13.64	16.11	Not Significant
Between	G1T3	G2T3	18.23	20.31	2.08	11.56	13.64	16.11	Not Significant
Between	G1T3	G3T3	18.23	25.00	6.77	11.56	13.64	16.11	Not Significant
Between	G2T3	G3T3	20.31	25.00	4.69	11.56	13.64	16.11	Not Significant

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Analysis by:
F.S. Chebib, Ph.D.

Table 25a-iii-ii. Urinary Urgency Incontinence: ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	566	Urinary Urgency Incontinence

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	4073	2037	1.40	Not Significant
Error 1	142	206293	1453		
Total 1 (subjects)	144	210366	1461	3.13	Less than 0 .1%
Times	1	5606	5606	12.00	Less than 0 .1%
T x G	2	5246	2623	5.61	Less than 1%
Error 2	142	66336	467		
TOTAL	**289**	**287554**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	26.04	3.12	6.77	3.12	16.41	3.89
B	48	18.23	3.12	9.38	3.12	13.80	3.89
C	49	21.94	3.09	23.47	3.09	22.70	3.85
ALL	**145**	**22.07**	**1.79**	**13.28**	**1.79**	**17.67**	**2.54**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	13.28	22.07	8.79	4.98	6.54	8.35	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	16.41	13.80	2.60	12.85	15.97	19.63	Not Significant
Between	G1	G3	16.41	22.70	6.30	12.85	15.97	19.63	Not Significant
Between	G2	G3	13.80	22.70	8.90	12.85	15.97	19.63	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	6.77	26.04	19.27	12.53	14.79	17.47	Less than 1%
Between	G2T3	G2T1	9.38	18.23	8.85	12.53	14.79	17.47	Not Significant
Between	G3T3	G3T1	23.47	21.94	1.53	12.53	14.79	17.47	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	26.04	18.23	7.81	12.53	14.79	17.47	Not Significant
Between	G1T1	G3T1	26.04	21.94	4.10	12.53	14.79	17.47	Not Significant
Between	G2T1	G3T1	18.23	21.94	3.71	12.53	14.79	17.47	Not Significant
Between	G1T3	G2T3	6.77	9.38	2.60	12.53	14.79	17.47	Not Significant
Between	G1T3	G3T3	6.77	23.47	16.70	12.53	14.79	17.47	Less than 1%
Between	G2T3	G3T3	9.38	23.47	14.09	12.53	14.79	17.47	Less than 5%

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F.S. Chebib, Ph.D.

Table 25b. Domain Bowel Dysfunction from PFDI-20(+2): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	561	Domain Bowel Dysfunction from PFDI-20(+2)

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	4546	2273	4.76	Less than 5%
Error 1	142	67873	478		
Total 1 (subjects)	144	72419	503	6.76	Less than 0 .1%
Times	1	3204	3204	43.04	Less than 0 .1%
T x G	2	890	445	5.98	Less than 1%
Error 2	142	10571	74		
TOTAL	**289**	**87083**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	15.28	1.25	5.44	1.25	10.36	2.23
B	48	15.10	1.25	6.71	1.25	10.91	2.23
C	49	19.90	1.23	18.08	1.23	18.99	2.21
ALL	**145**	**16.78**	**0.72**	**10.13**	**0.72**	**13.46**	**1.01**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	10.13	16.78	6.65	1.99	2.61	3.33	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	10.36	10.91	0.55	7.37	9.16	11.26	Not Significant
Between	G1	G3	10.36	18.99	8.63	7.37	9.16	11.26	Less than 5%
Between	G2	G3	10.91	18.99	8.08	7.37	9.16	11.26	Less than 5%

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	5.44	15.28	9.84	5.00	5.90	6.97	Less than 1%
Between	G2T3	G2T1	6.71	15.10	8.39	5.00	5.90	6.97	Less than 1%
Between	G3T3	G3T1	18.08	19.90	1.81	5.00	5.90	6.97	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	15.28	15.10	0.17	5.00	5.90	6.97	Not Significant
Between	G1T1	G3T1	15.28	19.90	4.62	5.00	5.90	6.97	Not Significant
Between	G2T1	G3T1	15.10	19.90	4.79	5.00	5.90	6.97	Not Significant
Between	G1T3	G2T3	5.44	6.71	1.27	5.00	5.90	6.97	Not Significant
Between	G1T3	G3T3	5.44	18.08	12.64	5.00	5.90	6.97	Less than 1%
Between	G2T3	G3T3	6.71	18.08	11.37	5.00	5.90	6.97	Less than 1%

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F.S. Chebib, Ph.D.

Table 25b-i. Bowel Obstruction: ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	567	Bowel Obstruction

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	9730	4865	5.97	Less than 1%
Error 1	142	115652	814		
Total 1 (subjects)	144	125382	871	5.03	Less than 0 .1%
Times	1	5104	5104	29.50	Less than 0 .1%
T x G	2	1852	926	5.35	Less than 1%
Error 2	142	24571	173		
TOTAL	**289**	**156910**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	18.06	1.90	5.38	1.90	11.72	2.91
B	48	19.79	1.90	8.51	1.90	14.15	2.91
C	49	25.68	1.88	24.32	1.88	25.00	2.88
ALL	**145**	**21.21**	**1.09**	**12.82**	**1.09**	**17.01**	**1.54**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	12.82	21.21	8.39	3.03	3.98	5.08	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	11.72	14.15	2.43	9.62	11.96	14.70	Not Significant
Between	G1	G3	11.72	25.00	13.28	9.62	11.96	14.70	Less than 1%
Between	G2	G3	14.15	25.00	10.85	9.62	11.96	14.70	Less than 5%

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	5.38	18.06	12.67	7.63	9.00	10.63	Less than 1%
Between	G2T3	G2T1	8.51	19.79	11.28	7.63	9.00	10.63	Less than 1%
Between	G3T3	G3T1	24.32	25.68	1.36	7.63	9.00	10.63	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	18.06	19.79	1.74	7.63	9.00	10.63	Not Significant
Between	G1T1	G3T1	18.06	25.68	7.62	7.63	9.00	10.63	Not Significant
Between	G2T1	G3T1	19.79	25.68	5.89	7.63	9.00	10.63	Not Significant
Between	G1T3	G2T3	5.38	8.51	3.13	7.63	9.00	10.63	Not Significant
Between	G1T3	G3T3	5.38	24.32	18.94	7.63	9.00	10.63	Less than 1%
Between	G2T3	G3T3	8.51	24.32	15.81	7.63	9.00	10.63	Less than 1%

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Analysis by:
F.S. Chebib, Ph.D.

Table 25b-ii. Bowel Urgency: ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	568	Bowel Urgency

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	11258	5629	3.71	Less than 5%
Error 1	142	215229	1516		
Total 1 (subjects)	144	226487	1573	4.67	Less than 0 .1%
Times	1	11172	11172	33.18	Less than 0 .1%
T x G	2	2895	1447	4.30	Less than 5%
Error 2	142	47808	337		
TOTAL	**289**	**288362**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	23.96	2.65	4.69	2.65	14.32	3.97
B	48	25.52	2.65	11.46	2.65	18.49	3.97
C	49	31.12	2.62	27.04	2.62	29.08	3.93
ALL	**145**	**26.90**	**1.52**	**14.48**	**1.52**	**20.69**	**2.15**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	14.48	26.90	12.41	4.22	5.55	7.09	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	14.32	18.49	4.17	13.12	16.31	20.05	Not Significant
Between	G1	G3	14.32	29.08	14.76	13.12	16.31	20.05	Less than 5%
Between	G2	G3	18.49	29.08	10.59	13.12	16.31	20.05	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	4.69	23.96	19.27	10.64	12.56	14.83	Less than 5%
Between	G2T3	G2T1	11.46	25.52	14.06	10.64	12.56	14.83	Less than 5%
Between	G3T3	G3T1	27.04	31.12	4.08	10.64	12.56	14.83	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	23.96	25.52	1.56	10.64	12.56	14.83	Not Significant
Between	G1T1	G3T1	23.96	31.12	7.16	10.64	12.56	14.83	Not Significant
Between	G2T1	G3T1	25.52	31.12	5.60	10.64	12.56	14.83	Not Significant
Between	G1T3	G2T3	4.69	11.46	6.77	10.64	12.56	14.83	Not Significant
Between	G1T3	G3T3	4.69	27.04	22.35	10.64	12.56	14.83	Less than 5%
Between	G2T3	G3T3	11.46	27.04	15.58	10.64	12.56	14.83	Less than 5%

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Analysis by:
F.S. Chebib, Ph.D.

Table 25b-iii. Bowel Incontinence (Flatual + Fecal): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	569	Bowel Incontinence (Flatual + Fecal)

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	2085	1042	1.83	Not Significant
Error 1	142	80714	568		
Total 1 (subjects)	144	82798	575	5.45	Less than 0 .1%
Times	1	1140	1140	10.80	Less than 1%
T x G	2	225	113	1.07	Not Significant
Error 2	142	14989	106		
TOTAL	**289**	**99153**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	14.24	1.48	8.68	1.48	11.46	2.43
B	48	10.94	1.48	6.08	1.48	8.51	2.43
C	49	15.82	1.47	14.29	1.47	15.05	2.41
ALL	**145**	**13.68**	**0.85**	**9.71**	**0.85**	**11.70**	**1.21**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	9.71	13.68	3.97	2.37	3.11	3.97	Less than 1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	11.46	8.51	2.95	8.04	9.99	12.28	Not Significant
Between	G1	G3	11.46	15.05	3.59	8.04	9.99	12.28	Not Significant
Between	G2	G3	8.51	15.05	6.54	8.04	9.99	12.28	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	8.68	14.24	5.56	5.96	7.03	8.30	Not Significant
Between	G2T3	G2T1	6.08	10.94	4.86	5.96	7.03	8.30	Not Significant
Between	G3T3	G3T1	14.29	15.82	1.53	5.96	7.03	8.30	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	14.24	10.94	3.30	5.96	7.03	8.30	Not Significant
Between	G1T1	G3T1	14.24	15.82	1.58	5.96	7.03	8.30	Not Significant
Between	G2T1	G3T1	10.94	15.82	4.88	5.96	7.03	8.30	Not Significant
Between	G1T3	G2T3	8.68	6.08	2.60	5.96	7.03	8.30	Not Significant
Between	G1T3	G3T3	8.68	14.29	5.61	5.96	7.03	8.30	Not Significant
Between	G2T3	G3T3	6.08	14.29	8.21	5.96	7.03	8.30	Not Significant

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Analysis by:
F.S. Chebib, Ph.D.

Table 25b-iii-i. Flatual Incontinence: ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	571	Flatual Incontinence

Notes

SECTION 1 - ANOVA

Source of Variation	DF	SS	MS	F	Significance
Groups	2	4984	2492	1.44	Not Significant
Error 1	142	246214	1734		
Total 1 (subjects)	144	251198	1744	3.31	Less than 0 .1%
Times	1	5828	5828	11.06	Less than 1%
T x G	2	595	298	0.56	Not Significant
Error 2	142	74827	527		
TOTAL	**289**	**332448**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	28.13	3.31	15.10	3.31	21.61	4.25
B	48	19.79	3.31	12.50	3.31	16.15	4.25
C	49	29.59	3.28	22.96	3.28	26.28	4.21
ALL	**145**	**25.86**	**1.91**	**16.90**	**1.91**	**21.38**	**2.70**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	16.90	25.86	8.97	5.28	6.94	8.87	Less than 1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	21.61	16.15	5.47	14.04	17.45	21.44	Not Significant
Between	G1	G3	21.61	26.28	4.66	14.04	17.45	21.44	Not Significant
Between	G2	G3	16.15	26.28	10.13	14.04	17.45	21.44	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	15.10	28.13	13.02	13.31	15.71	18.55	Not Significant
Between	G2T3	G2T1	12.50	19.79	7.29	13.31	15.71	18.55	Not Significant
Between	G3T3	G3T1	22.96	29.59	6.63	13.31	15.71	18.55	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	28.13	19.79	8.33	13.31	15.71	18.55	Not Significant
Between	G1T1	G3T1	28.13	29.59	1.47	13.31	15.71	18.55	Not Significant
Between	G2T1	G3T1	19.79	29.59	9.80	13.31	15.71	18.55	Not Significant
Between	G1T3	G2T3	15.10	12.50	2.60	13.31	15.71	18.55	Not Significant
Between	G1T3	G3T3	15.10	22.96	7.86	13.31	15.71	18.55	Not Significant
Between	G2T3	G3T3	12.50	22.96	10.46	13.31	15.71	18.55	Not Significant

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F.S. Chebib, Ph.D.

Table 25b-iii-ii. Fecal Incontinence: ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	570	Fecal Incontinence

Notes

SECTION 1 - ANOVA

Source of Variation	DF	SS	MS	F	Significance
Groups	2	1127	563	1.16	Not Significant
Error 1	142	68924	485		
Total 1 (subjects)	144	70051	486	5.76	Less than 0 .1%
Times	1	156	156	1.84	Not Significant
T x G	2	269	134	1.59	Not Significant
Error 2	142	11998	84		
TOTAL	**289**	**82473**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	7.29	1.33	5.47	1.33	6.38	2.25
B	48	6.51	1.33	2.86	1.33	4.69	2.25
C	49	8.93	1.31	9.95	1.31	9.44	2.23
ALL	**145**	**7.59**	**0.76**	**6.12**	**0.76**	**6.85**	**1.08**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	6.12	7.59	1.47	2.12	2.78	3.55	Not Significant

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	6.38	4.69	1.69	7.43	9.23	11.35	Not Significant
Between	G1	G3	6.38	9.44	3.06	7.43	9.23	11.35	Not Significant
Between	G2	G3	4.69	9.44	4.75	7.43	9.23	11.35	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	5.47	7.29	1.82	5.33	6.29	7.43	Not Significant
Between	G2T3	G2T1	2.86	6.51	3.65	5.33	6.29	7.43	Not Significant
Between	G3T3	G3T1	9.95	8.93	1.02	5.33	6.29	7.43	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	7.29	6.51	0.78	5.33	6.29	7.43	Not Significant
Between	G1T1	G3T1	7.29	8.93	1.64	5.33	6.29	7.43	Not Significant
Between	G2T1	G3T1	6.51	8.93	2.42	5.33	6.29	7.43	Not Significant
Between	G1T3	G2T3	5.47	2.86	2.60	5.33	6.29	7.43	Not Significant
Between	G1T3	G3T3	5.47	9.95	4.48	5.33	6.29	7.43	Not Significant
Between	G2T3	G3T3	2.86	9.95	7.08	5.33	6.29	7.43	Not Significant

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Analysis by:
F.S. Chebib, Ph.D.

Table 25c. Domain POP from PFDI-20(+2): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	559	Domain POP from PFDI-20(+2)

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	1320	660	2.20	Not Significant
Error 1	142	42519	299		
Total 1 (subjects)	144	43839	304	5.08	Less than 0 .1%
Times	1	1724	1724	28.80	Less than 0 .1%
T x G	2	1559	780	13.02	Less than 0 .1%
Error 2	142	8502	60		
TOTAL	**289**	**55625**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	12.87	1.12	2.60	1.12	7.74	1.77
B	48	10.34	1.12	4.84	1.12	7.59	1.77
C	49	11.66	1.11	12.68	1.11	12.17	1.75
ALL	**145**	**11.63**	**0.64**	**6.75**	**0.64**	**9.19**	**0.91**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	6.75	11.63	4.88	1.78	2.34	2.99	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	7.74	7.59	0.15	5.83	7.25	8.91	Not Significant
Between	G1	G3	7.74	12.17	4.43	5.83	7.25	8.91	Not Significant
Between	G2	G3	7.59	12.17	4.58	5.83	7.25	8.91	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	2.60	12.87	10.27	4.49	5.29	6.25	Less than 0 .1%
Between	G2T3	G2T1	4.84	10.34	5.51	4.49	5.29	6.25	Less than 1%
Between	G3T3	G3T1	12.68	11.66	1.02	4.49	5.29	6.25	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	12.87	10.34	2.53	4.49	5.29	6.25	Not Significant
Between	G1T1	G3T1	12.87	11.66	1.21	4.49	5.29	6.25	Not Significant
Between	G2T1	G3T1	10.34	11.66	1.32	4.49	5.29	6.25	Not Significant
Between	G1T3	G2T3	2.60	4.84	2.23	4.49	5.29	6.25	Not Significant
Between	G1T3	G3T3	2.60	12.68	10.08	4.49	5.29	6.25	Less than 0 .1%
Between	G2T3	G3T3	4.84	12.68	7.85	4.49	5.29	6.25	Less than 0 .1%

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Analysis by:
F.S. Chebib, Ph.D.

Table 25d. Domain Pelvic Pain from PFDI-20(+2): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	558	Domain Pelvic Pain from PFDI-20(+2)

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	2111	1055	1.79	Not Significant
Error 1	142	83522	588		
Total 1 (subjects)	144	85633	595	5.14	Less than 0 .1%
Times	1	2742	2742	23.71	Less than 0 .1%
T x G	2	1151	575	4.98	Less than 1%
Error 2	142	16420	116		
TOTAL	**289**	**105946**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	14.06	1.55	6.08	1.55	10.07	2.48
B	48	15.10	1.55	5.21	1.55	10.16	2.48
C	49	16.16	1.54	15.48	1.54	15.82	2.45
ALL	**145**	**15.11**	**0.89**	**8.97**	**0.89**	**12.04**	**1.26**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	8.97	15.11	6.15	2.48	3.25	4.16	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	10.07	10.16	0.09	8.18	10.16	12.49	Not Significant
Between	G1	G3	10.07	15.82	5.75	8.18	10.16	12.49	Not Significant
Between	G2	G3	10.16	15.82	5.66	8.18	10.16	12.49	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	6.08	14.06	7.99	6.23	7.36	8.69	Less than 1%
Between	G2T3	G2T1	5.21	15.10	9.90	6.23	7.36	8.69	Less than 1%
Between	G3T3	G3T1	15.48	16.16	0.68	6.23	7.36	8.69	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	14.06	15.10	1.04	6.23	7.36	8.69	Not Significant
Between	G1T1	G3T1	14.06	16.16	2.09	6.23	7.36	8.69	Not Significant
Between	G2T1	G3T1	15.10	16.16	1.05	6.23	7.36	8.69	Not Significant
Between	G1T3	G2T3	6.08	5.21	0.87	6.23	7.36	8.69	Not Significant
Between	G1T3	G3T3	6.08	15.48	9.40	6.23	7.36	8.69	Less than 1%
Between	G2T3	G3T3	5.21	15.48	10.27	6.23	7.36	8.69	Less than 1%

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Analysis by:
F.S. Chebib, Ph.D.

Table 25e. Domain Sexual Dysfunction from PFDI-20(+2): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	554	Domain Sexual Dysfunction from PFDI-20(+2)

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	4421	2210	1.52	Not Significant
Error 1	142	206716	1456		
Total 1 (subjects)	144	211137	1466	7.83	Less than 0 .1%
Times	1	5716	5716	30.52	Less than 0 .1%
T x G	2	3862	1931	10.31	Less than 0 .1%
Error 2	142	26594	187		
TOTAL	**289**	**247309**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	30.47	1.98	18.75	1.98	24.61	3.89
B	48	30.99	1.98	14.84	1.98	22.92	3.89
C	49	31.38	1.96	32.40	1.96	31.89	3.85
ALL	**145**	**30.95**	**1.14**	**22.07**	**1.14**	**26.51**	**1.61**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	22.07	30.95	8.88	3.15	4.14	5.29	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	24.61	22.92	1.69	12.86	15.99	19.65	Not Significant
Between	G1	G3	24.61	31.89	7.28	12.86	15.99	19.65	Not Significant
Between	G2	G3	22.92	31.89	8.97	12.86	15.99	19.65	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	18.75	30.47	11.72	7.93	9.36	11.06	Less than 0 .1%
Between	G2T3	G2T1	14.84	30.99	16.15	7.93	9.36	11.06	Less than 0 .1%
Between	G3T3	G3T1	32.40	31.38	1.02	7.93	9.36	11.06	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	30.47	30.99	0.52	7.93	9.36	11.06	Not Significant
Between	G1T1	G3T1	30.47	31.38	0.91	7.93	9.36	11.06	Not Significant
Between	G2T1	G3T1	30.99	31.38	0.39	7.93	9.36	11.06	Not Significant
Between	G1T3	G2T3	18.75	14.84	3.91	7.93	9.36	11.06	Not Significant
Between	G1T3	G3T3	18.75	32.40	13.65	7.93	9.36	11.06	Less than 0 .1%
Between	G2T3	G3T3	14.84	32.40	17.55	7.93	9.36	11.06	Less than 0 .1%

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Analysis by:
F.S. Chebib, Ph.D.

Table 26. PFIQ-7 (Pelvic Floor Impact Questionnaire): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	861	PFIQ-7 (Pelvic Floor Impact Questionnaire)

SECTION 1 - ANOVA

Notes

Source of Variation	DF	SS	MS	F	Significance
Groups	2	314	157	0.59	Not Significant
Error 1	142	37604	265		
Total 1 (subjects)	144	37918	263	6.22	Less than 0 .1%
Times	1	380	380	8.96	Less than 1%
T x G	2	295	148	3.49	Less than 5%
Error 2	142	6013	42		
TOTAL	**289**	**44606**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	7.90	0.94	4.46	0.94	6.18	1.66
B	48	8.33	0.94	4.33	0.94	6.33	1.66
C	49	8.20	0.93	8.71	0.93	8.45	1.64
ALL	**145**	**8.14**	**0.54**	**5.86**	**0.54**	**7.00**	**0.76**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	5.86	8.14	2.29	1.50	1.97	2.52	Less than 1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	6.18	6.33	0.15	5.49	6.82	8.38	Not Significant
Between	G1	G3	6.18	8.45	2.27	5.49	6.82	8.38	Not Significant
Between	G2	G3	6.33	8.45	2.12	5.49	6.82	8.38	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	4.46	7.90	3.44	3.77	4.45	5.26	Not Significant
Between	G2T3	G2T1	4.33	8.33	4.00	3.77	4.45	5.26	Less than 5%
Between	G3T3	G3T1	8.71	8.20	0.52	3.77	4.45	5.26	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	7.90	8.33	0.43	3.77	4.45	5.26	Not Significant
Between	G1T1	G3T1	7.90	8.20	0.29	3.77	4.45	5.26	Not Significant
Between	G2T1	G3T1	8.33	8.20	0.14	3.77	4.45	5.26	Not Significant
Between	G1T3	G2T3	4.46	4.33	0.13	3.77	4.45	5.26	Not Significant
Between	G1T3	G3T3	4.46	8.71	4.25	3.77	4.45	5.26	Less than 5%
Between	G2T3	G3T3	4.33	8.71	4.38	3.77	4.45	5.26	Less than 5%

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Analysis by:
F.S. Chebib, Ph.D.

Table 26a. UIQ (Bladder Dysfunction QoL Domain from PFIQ-7): ANOVA

PELVIC FLOOR HEALTH STUDY **By: Kelli Berzuk**

Index	651	UIQ (Bladder Dysfunction QoL Domain from PFIQ-7)

SECTION 1 - ANOVA

Source of Variation	DF	SS	MS	F	Significance
Groups	2	308	154	0.51	Not Significant
Error 1	142	42667	300		
Total 1 (subjects)	144	42975	298	6.10	Less than 0 .1%
Times	1	138	138	2.82	Not Significant
T x G	2	308	154	3.15	Less than 5%
Error 2	142	6946	49		
TOTAL	**289**	**50367**			

Notes

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	7.84	1.01	4.27	1.01	6.05	1.77
B	48	6.75	1.01	4.76	1.01	5.75	1.77
C	49	7.39	1.00	8.75	1.00	8.07	1.75
ALL	**145**	**7.32**	**0.58**	**5.94**	**0.58**	**6.63**	**0.82**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	5.94	7.32	1.38	1.61	2.12	2.70	Not Significant

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	6.05	5.75	0.30	5.84	7.26	8.93	Not Significant
Between	G1	G3	6.05	8.07	2.01	5.84	7.26	8.93	Not Significant
Between	G2	G3	5.75	8.07	2.31	5.84	7.26	8.93	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	4.27	7.84	3.57	4.05	4.79	5.65	Not Significant
Between	G2T3	G2T1	4.76	6.75	1.98	4.05	4.79	5.65	Not Significant
Between	G3T3	G3T1	8.75	7.39	1.36	4.05	4.79	5.65	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	7.84	6.75	1.09	4.05	4.79	5.65	Not Significant
Between	G1T1	G3T1	7.84	7.39	0.45	4.05	4.79	5.65	Not Significant
Between	G2T1	G3T1	6.75	7.39	0.64	4.05	4.79	5.65	Not Significant
Between	G1T3	G2T3	4.27	4.76	0.50	4.05	4.79	5.65	Not Significant
Between	G1T3	G3T3	4.27	8.75	4.48	4.05	4.79	5.65	Less than 5%
Between	G2T3	G3T3	4.76	8.75	3.98	4.05	4.79	5.65	Not Significant

Analysis by:
F.S. Chebib, Ph.D.

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Table 26b. CRAIQ (Colorectal Dysfunction QoL Domain from PFIQ-7): ANOVA

PELVIC FLOOR HEALTH STUDY **By: Kelli Berzuk**

Index	751	CRAIQ (Colorectal Dysfunction QoL Domain from PFIQ-7)

SECTION 1 - ANOVA

Source of Variation	DF	SS	MS	F	Significance
Groups	2	463	231	0.77	Not Significant
Error 1	142	42667	300		
Total 1 (subjects)	144	43130	300	5.61	Less than 0 .1%
Times	1	394	394	7.38	Less than 1%
T x G	2	359	179	3.36	Less than 5%
Error 2	142	7580	53		
TOTAL	**289**	**51463**			

Notes

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	7.14	1.05	3.08	1.05	5.11	1.77
B	48	8.13	1.05	4.37	1.05	6.25	1.77
C	49	7.77	1.04	8.55	1.04	8.16	1.75
ALL	**145**	**7.68**	**0.61**	**5.35**	**0.61**	**6.52**	**0.86**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	5.35	7.68	2.33	1.68	2.21	2.82	Less than 1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	5.11	6.25	1.14	5.84	7.26	8.93	Not Significant
Between	G1	G3	5.11	8.16	3.05	5.84	7.26	8.93	Not Significant
Between	G2	G3	6.25	8.16	1.91	5.84	7.26	8.93	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	3.08	7.14	4.07	4.24	5.00	5.91	Not Significant
Between	G2T3	G2T1	4.37	8.13	3.77	4.24	5.00	5.91	Not Significant
Between	G3T3	G3T1	8.55	7.77	0.78	4.24	5.00	5.91	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	7.14	8.13	0.99	4.24	5.00	5.91	Not Significant
Between	G1T1	G3T1	7.14	7.77	0.63	4.24	5.00	5.91	Not Significant
Between	G2T1	G3T1	8.13	7.77	0.36	4.24	5.00	5.91	Not Significant
Between	G1T3	G2T3	3.08	4.37	1.29	4.24	5.00	5.91	Not Significant
Between	G1T3	G3T3	3.08	8.55	5.48	4.24	5.00	5.91	Less than 5%
Between	G2T3	G3T3	4.37	8.55	4.19	4.24	5.00	5.91	Not Significant

Analysis by:
F.S. Chebib, Ph.D.

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Table 26c. POPIQ (POP QoL Domain from PFIQ-7): ANOVA

PELVIC FLOOR HEALTH STUDY

By: Kelli Berzuk

Index	851	POPIQ (POP QoL Domain from PFIQ-7)

SECTION 1 - ANOVA

Source of Variation	DF	SS	MS	F	Significance
Groups	2	252	126	0.41	Not Significant
Error 1	142	43220	304		
Total 1 (subjects)	144	43472	302	4.61	Less than 0 .1%
Times	1	721	721	11.01	Less than 1%
T x G	2	397	199	3.04	Not Significant
Error 2	142	9290	65		
TOTAL	**289**	**53880**			

Notes

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T3		ALL	
Group	**N**	**MEAN**	**S.E.**	**MEAN**	**S.E.**	**MEAN**	**S.E.**
A	48	8.73	1.17	6.05	1.17	7.39	1.78
B	48	10.12	1.17	3.87	1.17	6.99	1.78
C	49	9.43	1.16	8.84	1.16	9.14	1.76
ALL	**145**	**9.43**	**0.67**	**6.27**	**0.67**	**7.85**	**0.95**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (2 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T3	T1	6.27	9.43	3.15	1.86	2.45	3.13	Less than 1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	7.39	6.99	0.40	5.88	7.31	8.98	Not Significant
Between	G1	G3	7.39	9.14	1.74	5.88	7.31	8.98	Not Significant
Between	G2	G3	6.99	9.14	2.14	5.88	7.31	8.98	Not Significant

PART III - GROUP x TIME INTERACTION (6 Groups, 142 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T3	G1T1	6.05	8.73	2.68	4.69	5.53	6.54	Not Significant
Between	G2T3	G2T1	3.87	10.12	6.25	4.69	5.53	6.54	Not Significant
Between	G3T3	G3T1	8.84	9.43	0.58	4.69	5.53	6.54	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	8.73	10.12	1.39	4.69	5.53	6.54	Not Significant
Between	G1T1	G3T1	8.73	9.43	0.70	4.69	5.53	6.54	Not Significant
Between	G2T1	G3T1	10.12	9.43	0.69	4.69	5.53	6.54	Not Significant
Between	G1T3	G2T3	6.05	3.87	2.18	4.69	5.53	6.54	Not Significant
Between	G1T3	G3T3	6.05	8.84	2.79	4.69	5.53	6.54	Not Significant
Between	G2T3	G3T3	3.87	8.84	4.97	4.69	5.53	6.54	Not Significant

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Analysis by:
F.S. Chebib, Ph.D.

Table 27. PFM Total=Knowledge + Importance + Commitment: ANOVA

Pelvic Floor Health Study **By: Kelli Berzuk**

INDEX 256 **PFM Total=Knowledge + Importance + Commitment**

SECTION 1 - ANOVA

NOTES:

Source of Variation	DF	SS	MS	F	Significance
Groups	2	21376	10688	13.57	Less than 0 .1%
Error 1	142	111823	787		
Total 1 (subjects)	144	133200	925	5.71	Less than 0 .1%
Times	2	47737	23868	147.30	Less than 0 .1%
T x G	4	14764	3691	22.78	Less than 0 .1%
Error 2	284	46018	162		
TOTAL	**434**	**241718**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T2		T3		ALL	
	N	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.
A	48	57.12	1.84	79.69	1.84	94.62	1.84	77.14	2.34
B	48	55.90	1.84	78.65	1.84	88.89	1.84	74.48	2.34
C	49	57.65	1.82	62.59	1.82	63.27	1.82	61.17	2.31
ALL	**145**	**56.90**	**1.06**	**73.56**	**1.06**	**82.13**	**1.06**	**70.86**	**0.61**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (3 Groups, 284 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T2	T1	73.56	56.90	16.67	3.50	4.36	5.35	Less than 0 .1%
Between	T3	T1	82.13	56.90	25.23	3.50	4.36	5.35	Less than 0 .1%
Between	T3	T2	82.13	73.56	8.56	3.50	4.36	5.35	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	77.14	74.48	2.66	7.72	9.60	11.80	Not Significant
Between	G1	G3	77.14	61.17	15.97	7.72	9.60	11.80	Less than 0 .1%
Between	G2	G3	74.48	61.17	13.31	7.72	9.60	11.80	Less than 0 .1%

PART III - GROUP x TIME INTERACTION (9 Groups, 284 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T2	G1T1	79.69	57.12	22.57	8.03	9.30	10.81	Less than 0 .1%
Between	G1T3	G1T1	94.62	57.12	37.50	8.03	9.30	10.81	Less than 0 .1%
Between	G1T3	G1T2	94.62	79.69	14.93	8.03	9.30	10.81	Less than 0 .1%
Between	G2T2	G2T1	78.65	55.90	22.74	8.03	9.30	10.81	Less than 0 .1%
Between	G2T3	G2T1	88.89	55.90	32.99	8.03	9.30	10.81	Less than 0 .1%
Between	G2T3	G2T2	88.89	78.65	10.24	8.03	9.30	10.81	Less than 1%
Between	G3T2	G3T1	62.59	57.65	4.93	8.03	9.30	10.81	Not Significant
Between	G3T3	G3T1	63.27	57.65	5.61	8.03	9.30	10.81	Not Significant
Between	G3T3	G3T2	63.27	62.59	0.68	8.03	9.30	10.81	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	57.12	55.90	1.22	8.03	9.30	10.81	Not Significant
Between	G1T1	G3T1	57.12	57.65	0.54	8.03	9.30	10.81	Not Significant
Between	G2T1	G3T1	55.90	57.65	1.75	8.03	9.30	10.81	Not Significant
Between	G1T2	G2T2	79.69	78.65	1.04	8.03	9.30	10.81	Not Significant
Between	G1T2	G3T2	79.69	62.59	17.10	8.03	9.30	10.81	Less than 0 .1%
Between	G2T2	G3T2	78.65	62.59	16.06	8.03	9.30	10.81	Less than 0 .1%
Between	G1T3	G2T3	94.62	88.89	5.73	8.03	9.30	10.81	Not Significant
Between	G1T3	G3T3	94.62	63.27	31.35	8.03	9.30	10.81	Less than 0 .1%
Between	G2T3	G3T3	88.89	63.27	25.62	8.03	9.30	10.81	Less than 0 .1%

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Analysis by
F. S. Chebib, Ph. D

Table 27a. PFM Exercise Knowledge: ANOVA

Pelvic Floor Health Study **By: Kelli Berzuk**

INDEX 252 PFM Exercise Knowledge

SECTION 1 - ANOVA **NOTES:**

Source of Variation	DF	SS	MS	F	Significance
Groups	2	4773	2386	2.14	Not Significant
Error 1	142	158699	1118		
Total 1 (subjects)	144	163471	1135	3.35	Less than 0 .1%
Times	2	17115	8557	25.23	Less than 0 .1%
T x G	4	4884	1221	3.60	Less than 1%
Error 2	284	96334	339		
TOTAL	**434**	**281805**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T2		T3		ALL	
	N	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.
A	48	85.42	2.66	97.92	2.66	100.00	2.66	94.44	2.79
B	48	78.13	2.66	100.00	2.66	100.00	2.66	92.71	2.79
C	49	83.67	2.63	87.76	2.63	88.78	2.63	86.73	2.76
ALL	**145**	**82.41**	**1.53**	**95.17**	**1.53**	**96.21**	**1.53**	**91.26**	**0.88**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (3 Groups, 284 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T2	T1	95.17	82.41	12.76	5.07	6.30	7.74	Less than 0 .1%
Between	T3	T1	96.21	82.41	13.79	5.07	6.30	7.74	Less than 0 .1%
Between	T3	T2	96.21	95.17	1.03	5.07	6.30	7.74	Not Significant

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	94.44	92.71	1.74	9.20	11.44	14.06	Not Significant
Between	G1	G3	94.44	86.73	7.71	9.20	11.44	14.06	Not Significant
Between	G2	G3	92.71	86.73	5.97	9.20	11.44	14.06	Not Significant

PART III - GROUP x TIME INTERACTION (9 Groups, 284 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T2	G1T1	97.92	85.42	12.50	11.62	13.45	15.64	Less than 5%
Between	G1T3	G1T1	100.00	85.42	14.58	11.62	13.45	15.64	Less than 1%
Between	G1T3	G1T2	100.00	97.92	2.08	11.62	13.45	15.64	Not Significant
Between	G2T2	G2T1	100.00	78.13	21.88	11.62	13.45	15.64	Less than 0 .1%
Between	G2T3	G2T1	100.00	78.13	21.88	11.62	13.45	15.64	Less than 0 .1%
Between	G2T3	G2T2	100.00	100.00	0.00	11.62	13.45	15.64	Not Significant
Between	G3T2	G3T1	87.76	83.67	4.08	11.62	13.45	15.64	Not Significant
Between	G3T3	G3T1	88.78	83.67	5.10	11.62	13.45	15.64	Not Significant
Between	G3T3	G3T2	88.78	87.76	1.02	11.62	13.45	15.64	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	85.42	78.13	7.29	11.62	13.45	15.64	Not Significant
Between	G1T1	G3T1	85.42	83.67	1.74	11.62	13.45	15.64	Not Significant
Between	G2T1	G3T1	78.13	83.67	5.55	11.62	13.45	15.64	Not Significant
Between	G1T2	G2T2	97.92	100.00	2.08	11.62	13.45	15.64	Not Significant
Between	G1T2	G3T2	97.92	87.76	10.16	11.62	13.45	15.64	Not Significant
Between	G2T2	G3T2	100.00	87.76	12.24	11.62	13.45	15.64	Less than 5%
Between	G1T3	G2T3	100.00	100.00	0.00	11.62	13.45	15.64	Not Significant
Between	G1T3	G3T3	100.00	88.78	11.22	11.62	13.45	15.64	Not Significant
Between	G2T3	G3T3	100.00	88.78	11.22	11.62	13.45	15.64	Not Significant

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Analysis by
F. S. Chebib, Ph. D

Table 27b. PFM Exercise Commitment: ANOVA

Pelvic Floor Health Study **By: Kelli Berzuk**

INDEX 253 **PFM Exercise Commitment**

SECTION 1 - ANOVA

NOTES:

Source of Variation	DF	SS	MS	F	Significance
Groups	2	16678	8339	5.65	Less than 1%
Error 1	142	209566	1476		
Total 1 (subjects)	144	226244	1571	3.69	Less than 0 .1%
Times	2	83621	41810	98.30	Less than 0 .1%
T x G	4	33922	8481	19.94	Less than 0 .1%
Error 2	284	120790	425		
TOTAL	**434**	**464578**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T2		T3		ALL	
	N	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.
A	48	33.33	2.98	44.79	2.98	84.90	2.98	54.34	3.20
B	48	35.42	2.98	42.19	2.98	76.04	2.98	51.22	3.20
C	49	35.20	2.95	42.86	2.95	41.84	2.95	39.97	3.17
ALL	**145**	**34.66**	**1.71**	**43.28**	**1.71**	**67.41**	**1.71**	**48.45**	**0.99**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (3 Groups, 284 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T2	T1	43.28	34.66	8.62	5.68	7.06	8.67	Less than 1%
Between	T3	T1	67.41	34.66	32.76	5.68	7.06	8.67	Less than 0 .1%
Between	T3	T2	67.41	43.28	24.14	5.68	7.06	8.67	Less than 0 .1%

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	54.34	51.22	3.13	10.57	13.14	16.15	Not Significant
Between	G1	G3	54.34	39.97	14.37	10.57	13.14	16.15	Less than 1%
Between	G2	G3	51.22	39.97	11.25	10.57	13.14	16.15	Less than 5%

PART III - GROUP x TIME INTERACTION (9 Groups, 284 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T2	G1T1	44.79	33.33	11.46	13.01	15.06	17.51	Not Significant
Between	G1T3	G1T1	84.90	33.33	51.56	13.01	15.06	17.51	Less than 0 .1%
Between	G1T3	G1T2	84.90	44.79	40.10	13.01	15.06	17.51	Less than 0 .1%
Between	G2T2	G2T1	42.19	35.42	6.77	13.01	15.06	17.51	Not Significant
Between	G2T3	G2T1	76.04	35.42	40.63	13.01	15.06	17.51	Less than 0 .1%
Between	G2T3	G2T2	76.04	42.19	33.85	13.01	15.06	17.51	Less than 0 .1%
Between	G3T2	G3T1	42.86	35.20	7.65	13.01	15.06	17.51	Not Significant
Between	G3T3	G3T1	41.84	35.20	6.63	13.01	15.06	17.51	Not Significant
Between	G3T3	G3T2	41.84	42.86	1.02	13.01	15.06	17.51	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	33.33	35.42	2.08	13.01	15.06	17.51	Not Significant
Between	G1T1	G3T1	33.33	35.20	1.87	13.01	15.06	17.51	Not Significant
Between	G2T1	G3T1	35.42	35.20	0.21	13.01	15.06	17.51	Not Significant
Between	G1T2	G2T2	44.79	42.19	2.60	13.01	15.06	17.51	Not Significant
Between	G1T2	G3T2	44.79	42.86	1.93	13.01	15.06	17.51	Not Significant
Between	G2T2	G3T2	42.19	42.86	0.67	13.01	15.06	17.51	Not Significant
Between	G1T3	G2T3	84.90	76.04	8.85	13.01	15.06	17.51	Not Significant
Between	G1T3	G3T3	84.90	41.84	43.06	13.01	15.06	17.51	Less than 0 .1%
Between	G2T3	G3T3	76.04	41.84	34.20	13.01	15.06	17.51	Less than 0 .1%

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F. S. Chebib, Ph. D

Table 27c. PFM Exercise Importance: ANOVA

Pelvic Floor Health Study **By: Kelli Berzuk**

INDEX 254 PFM Exercise Importance

SECTION 1 - ANOVA **NOTES:**

Source of Variation	DF	SS	MS	F	Significance
Groups	2	58048	29024	33.25	Less than 0 .1%
Error 1	142	123944	873		
Total 1 (subjects)	144	181991	1264	4.91	Less than 0 .1%
Times	2	80641	40320	156.51	Less than 0 .1%
T x G	4	31611	7903	30.68	Less than 0 .1%
Error 2	284	73165	258		
TOTAL	**434**	**367408**			

SECTION 2 - MEANS AND STANDARD ERRORS

		T1		T2		T3		ALL	
	N	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.	MEAN	S.E.
A	48	52.60	2.32	96.35	2.32	98.96	2.32	82.64	2.46
B	48	54.17	2.32	93.75	2.32	90.63	2.32	79.51	2.46
C	49	54.08	2.29	57.14	2.29	59.18	2.29	56.80	2.44
ALL	**145**	**53.62**	**1.33**	**82.24**	**1.33**	**82.76**	**1.33**	**72.87**	**0.77**

SECTION 3 - TUKEY COMPARISONS OF TWO MEANS

PART I - TIMES (3 Groups, 284 DF)

	Mean 1	Mean	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	T2	T1	82.24	53.62	28.62	4.42	5.49	6.75	Less than 0 .1%
Between	T3	T1	82.76	53.62	29.14	4.42	5.49	6.75	Less than 0 .1%
Between	T3	T2	82.76	82.24	0.52	4.42	5.49	6.75	Not Significant

PART II - GROUPS (3 Groups, 142 DF)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1	G2	82.64	79.51	3.13	8.13	10.11	12.42	Not Significant
Between	G1	G3	82.64	56.80	25.84	8.13	10.11	12.42	Less than 0 .1%
Between	G2	G3	79.51	56.80	22.71	8.13	10.11	12.42	Less than 0 .1%

PART III - GROUP x TIME INTERACTION (9 Groups, 284 DF)

PART IIIA - INTERACTION (TIMES OF SAME GROUP)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T2	G1T1	96.35	52.60	43.75	10.13	11.72	13.63	Less than 0 .1%
Between	G1T3	G1T1	98.96	52.60	46.35	10.13	11.72	13.63	Less than 0 .1%
Between	G1T3	G1T2	98.96	96.35	2.60	10.13	11.72	13.63	Not Significant
Between	G2T2	G2T1	93.75	54.17	39.58	10.13	11.72	13.63	Less than 0 .1%
Between	G2T3	G2T1	90.63	54.17	36.46	10.13	11.72	13.63	Less than 0 .1%
Between	G2T3	G2T2	90.63	93.75	3.13	10.13	11.72	13.63	Not Significant
Between	G3T2	G3T1	57.14	54.08	3.06	10.13	11.72	13.63	Not Significant
Between	G3T3	G3T1	59.18	54.08	5.10	10.13	11.72	13.63	Not Significant
Between	G3T3	G3T2	59.18	57.14	2.04	10.13	11.72	13.63	Not Significant

PART IIIB - INTERACTION (GROUPS AT THE SAME TIME)

	Mean 1	Mean 2	Mean 1	Mean 2	ABS DIFF	TQ.05	TQ.01	TQ.001	SIGNIFICANCE
Between	G1T1	G2T1	52.60	54.17	1.56	10.13	11.72	13.63	Not Significant
Between	G1T1	G3T1	52.60	54.08	1.48	10.13	11.72	13.63	Not Significant
Between	G2T1	G3T1	54.17	54.08	0.09	10.13	11.72	13.63	Not Significant
Between	G1T2	G2T2	96.35	93.75	2.60	10.13	11.72	13.63	Not Significant
Between	G1T2	G3T2	96.35	57.14	39.21	10.13	11.72	13.63	Less than 0 .1%
Between	G2T2	G3T2	93.75	57.14	36.61	10.13	11.72	13.63	Less than 0 .1%
Between	G1T3	G2T3	98.96	90.63	8.33	10.13	11.72	13.63	Not Significant
Between	G1T3	G3T3	98.96	59.18	39.77	10.13	11.72	13.63	Less than 0 .1%
Between	G2T3	G3T3	90.63	59.18	31.44	10.13	11.72	13.63	Less than 0 .1%

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Table 28. Seeking Information Effect on Group C PIKQ

PIKQ	Time 1 (mean %)	Time 2 (mean %)	Time 3 (mean %)	DIFFERENCE Time 1 & Time 2	DIFFERENCE Time 1 & Time 3
49 of 49 Group C	2125.03/49= **43.37**	2041.77/49= **41.67**	2387.52/49= **48.72**	**-1.70**	**+5.35**
41 of 49 Group C ***No info sought**	1741.70/41= **42.48**	1662.58/41= **40.55**	1920.86/41= **46.85**	**-1.93**	**+4.37**
8 of 49 Group C ***Sought info**	383.33/8= **47.91**	379.19/8= **47.40** (2 of 8 sought info at Time 2)	466.66/8= **58.33** (6 of 8 sought info at Time 3)	**-0.51**	**+10.42**

Table 29. ANOVA Summary

INDEX	DOMAIN	SUB-CATEGORY & SUB-SUB-CATEGORY		ANOVA Group x Time Interaction			
				Error Mean Square	Mean Square	F-value	p-value
PELVIC FLOOR HEALTH KNOWLEDGE INDICES							
PIKQ				**175**	**12,519**	**F=71.42**	**p<0.001**
PIKQ	**PIKQ-Incontinence**			**226**	**9,522**	**F=42.21**	**p<0.001**
PIKQ	**PIKQ-POP**			**255**	**16,563**	**F=64.89**	**p<0.001**
PFD SYMPTOM INDICES							
PFDI-20				**53**	**912**	**F=17.18**	**p<0.001**
PFDI-20	**UDI**			**117**	**1,383**	**F=11.78**	**p<0.001**
PFDI-20	**CRADI**			**80**	**533**	**F=6.65**	**p<0.01**
PFDI-20	**POPDI**			**67**	**958**	**F=14.31**	**p<0.001**
PFDI-20 Weighted				**53**	**869**	**F=16.45**	**p<0.001**
PFDI-20(+2) Weighted				**50**	**914**	**F=18.42**	**p<0.001**
PFDI-20(+2)	**BLADDER DYSFUNCTION**			**98**	**1,745**	**F=17.88**	**p<0.001**
PFDI-20(+2)	**BLADDER DYSFUNCTION**	**Bladder Obstruction**		**106**	**1,288**	**F=12.18**	**p<0.001**
PFDI-20(+2)	**BLADDER DYSFUNCTION**	**Urinary Frequency**		**365**	**4,613**	**F=12.63**	**p<0.001**
PFDI-20(+2)	**BLADDER DYSFUNCTION**	**Urinary Incontinence (Stress + Urgency)**		**223**	**1,687**	**F=7.55**	**p<0.001**
PFDI-20(+2)	**BLADDER DYSFUNCTION**	**Urinary Incontinence**	**Stress Incontinence**	**397**	**1,751**	**F=4.41**	**p<0.05**
			Urgency Incontinence	**467**	**2,623**	**F=5.61**	**p<0.01**
PFDI-20(+2)	**BOWEL DYSFUNCTION**			**74**	**445**	**F=5.98**	**p<0.01**
PFDI-20(+2)	**BOWEL DYSFUNCTION**	**Bowel Obstruction**		**173**	**926**	**F=5.35**	**p<0.01**
PFDI-20(+2)	**BOWEL DYSFUNCTION**	**Bowel Urgency**		**337**	**1,447**	**F=4.30**	**p<0.05**
PFDI-20(+2)	BOWEL DYSFUNCTION	Bowel Incontinence (Flatual + Fecal)		106	113	F=1.07	No Significance
PFDI-20(+2)	BOWEL DYSFUNCTION	Bowel Incontinence	Flatual Incontinence	527	298	F=0.56	No Significance
			Fecal Incontinence	84	134	F=1.59	No Significance
PFDI-20(+2)	**POP**			**60**	**780**	**F=13.02**	**p<0.001**
PFDI-20(+2)	**PELVIC PAIN**			**116**	**575**	**F=4.98**	**p<0.01**
PFDI-20(+2)	**SEXUAL DYSFUNCTION**			**187**	**1,931**	**F=10.31**	**p<0.001**
PFD QUALITY OF LIFE INDICES							
PFIQ-7				**42**	**148**	**F=3.49**	**p<0.05**
PFIQ-7	**UIQ**			**49**	**154**	**F=3.15**	**p<0.05**
PFIQ-7	**CRAIQ**			**53**	**179**	**F=3.36**	**p<0.05**
PFIQ-7	POPIQ			65	199	F=3.04	No Significance
PFM EXERCISE INDICES							
PFM Total= Knowledge + Importance + Commitment				**162**	**3,691**	**F=22.78**	**p<0.001**
PFM Exercise Knowledge				**339**	**1,221**	**F=3.60**	**p<0.01**
PFM Exercise Importance				**258**	**7,903**	**F=30.68**	**p<0.001**
PFM Exercise Commitment				**425**	**8,481**	**F=19.94**	**p<0.001**

TABLE LEGENDS

Table 1. Evidence for the Lack of Pelvic Floor Health Knowledge

This table summarizes the current research that has revealed society's lack of knowledge related to pelvic floor health and PFD. A profound lack of awareness toward SUI was noted in France, Germany, Italy, Spain, Sweden, United Kingdom, Canada, Mexico and Australia. Of the women studied, only 2% of those suffering with SUI knew the name of their PFD and, again, only 2% recognized coughing and sneezing as triggers to their urinary incontinence (2).

To improve health care in the United Kingdom, increasing PFD education and awareness were identified as the fourth and fifth factors within the list of five highest priorities (12). The need for raising awareness was identified for both the public and medical professional sectors, with a suggested focus to be aimed at the consequences of childbirth (11). PFD-related research in both Greece (13) and South Africa (14) uncovered a high prevalence of female urinary incontinence matched with a very low level of knowledge related to the disorder and suggested a need to focus on enlightening women on PFD risk factors and available medical treatment options (13) with PFM exercise being a first-line defense (14). Research showed that of participants in a United Kingdom study, less than 20% felt satisfied with their understanding of their PFD (15).

Table 2. Rationale for Raising Pelvic Floor Health Awareness

This table shows the rationale for raising pelvic floor health and PFD awareness. Numerous reasons exist including the fact that PFD is highly preventable and should,

therefore, be considered a public health issue (17). PFD is a high financial burden both personally and to the medical system (18). While our health field professionals should be comfortable discussing all dysfunctions, female urinary incontinence was recognized as the last medical taboo by the World Health Organization (10).

As well, it has been shown that poor coping strategies lead to worsening of PFD symptoms and even co-occurrence of different types of PFD and, therefore, correct information related to self-coping strategies is imperative (21). Since most women experience childbirth, which has been identified as a major risk factor for PFD (such as POP and both urinary and fecal incontinence), it is critical to enlighten women on pelvic floor health (22). Research shows that women receive very little information on this topic during pre-natal education sessions and often are not even taught proper PFM strengthening exercises (23).

Furthermore, women want this information (15) and require correct facts in order to make informed decisions (37). By allowing the commonly believed PFD-related fallacies to perpetuate, barriers to seeking PFD medical treatment and care are supported (38). Conversely, by raising pelvic floor health awareness, seeking medical care for PFD symptoms is encouraged (39).

Finally, while the prevalence of PFD is high, the prediction for future epidemiology trends upward with staggering statistics if nothing is done to change this course. Raising pelvic floor health awareness and self-care strategies to prevent and correct PFD is paramount to altering this forecasted development (3).

Table 3. Existing Studies for Raising Awareness re: Pelvic Floor Health

This table summarized the existing literature on the effects of pelvic floor health knowledge transfer. Both Geoffrion et al (30)., and Tannenbaum et al (34)., have shown that education workshops have successfully increased knowledge related to pelvic health and PFD, as well as decreasing, or eliminating, PFD symptoms through implementation of healthy coping strategies and behaviours, and seeking appropriate medical treatment and care (30, 34).

Information pamphlets have also been used to increase pelvic floor health information, and to encourage the use of medical treatment options and self-treatment techniques such as PFM exercises (41).

Table 4. Pelvic Floor Dysfunction (PFD) Risk Factors!

This table lists the common risk factors of PFD, ranging from specific gynaecological and obstetrical factors, to overall health factors and dietary behaviours. It also acknowledges the common issue of PFD co-occurrence, as the presence of a single PFD increases the likelihood of developing other types of PFD.

Table 5. Pelvic Floor Dysfunction (PFD) Warning Signs!

This table lists several warning signs of PFD. As they are often, and easily, overlooked or not known to be signs of health concerns, it is important to highlight them as indicators of the existence of PFD, or signs of the development of PFD.

Table 6. Pelvic Floor Muscle (PFM) Involvement in PFD

The PFM has been identified for its involvement in PFD, when not healthy. This table notes the association of PFM impairment with SUI (9), constipation (64) and POP (51). The PFM has been found dysfunctional for those suffering with urinary, gastrointestinal and sexual issues (4,57), and the improvement of PFM health through strengthening, has been shown to improve sexual function, desire, orgasm and overall sexual performance (80).

Table 7. Prevalence of PFD: Bladder Dysfunction

This table lists the statistics related to the prevalence of bladder dysfunction such as urinary incontinence and overactive bladder. Because definitions and populations vary between studies, the prevalence of urinary incontinence can show a dramatic range.

Table 8. Prevalence of PFD: Bowel Dysfunction

This table lists the statistics related to the prevalence of bowel dysfunction such as fecal and flatual incontinence and constipation. Because definitions and populations vary between studies, the prevalence of bowel incontinence can show a dramatic range.

Table 9. Prevalence of PFD: Pelvic Organ Prolapse (POP)

This table lists the prevalence of POP, as well as the financial implications related to POP and future estimates of POP. Because definitions and populations vary between studies, the prevalence of POP can show a dramatic range.

Table 10. Prevalence of PFD: Pelvic Pain & Sexual Dysfunction

This table lists the prevalence of chronic pelvic pain and sexual dysfunction and their association with other types of PFD. Because definitions and populations vary between studies, the prevalence of pelvic pain and sexual dysfunction can show a dramatic range.

Table 11. Prevalence of PFD: Co-occurrence of PFD

Current literature shows that the presence of PFD increases the likelihood of developing additional types of PFD. This table lists research studies focusing on the prevalence of co-occurrence of PFD.

Table 12. Consequences of PFD

PFD has been shown to have negative physical, psychological and emotional effects on those afflicted. This table lists the research findings of PFD sequelae on personal relationships and interactions, social and physical activity, marriage, intimacy and sexual behaviour, physical contact with others, mental anguish, depression, embarrassment, concentration, vitality, self-esteem and confidence, stigmatization, urinary tract infection, perineal rashing and ulcerations, falls and fractures, and career and employment.

Table 13a. PFD Symptom & QoL Questionnaires

This table lists the advantages and disadvantages of the available measurement tools used to determine and quantify the signs and symptoms of PFD. The table also lists

the outcome measures that may change following an intervention. The pros, cons and dependant variables of the PISQ, KHQ, P-QOL, PFDI, PFIQ, e-PAQ-PF, and PelFIs are noted here.

Table 13b. Knowledge-Acquisition Questionnaires

This table lists the advantages and disadvantages of the available measurement tools used to determine and quantify the knowledge base related to pelvic floor health and PFD. The table also lists the outcome measures that may change following an intervention. The pros, cons and dependant variables of the Focused Knowledge Questionnaire and the PIKQ are noted in this table.

Table 14. Variable Coding

This table depicts the variable name, variable identification number and the group that the 87 variables had been derived. Additionally, the information required for coding each variable was listed such as the minimum and maximum coding numeric, as well as the actual code used to transpose the responses into numerals appropriate for analysis.

Table 15. Berzuk Indices of Pelvic Floor Dysfunction (BIOPFD)

This table depicts the calculations used to create indices that were later analyzed. In total 35 PFD indices were created; one to collect data related to the total number of birthing interventions experienced by each participant, three related to the pelvic floor health knowledge data collected, firstly as a whole and then for each domain within the PIKQ, 21 indices were based on the PFD symptoms data including the PFDI-20, PFDI-20(+2) and the domains, sub-categories and sub-sub-categories encompasses within

domains, four indices directed to the PFD QoL data that included the PFIQ as a whole as well as its three individual domains, and finally, six domains related to the five non-validated questions including each item as a separate domain plus one index that encompassed responses of items 2, 3 and 4 to determine the total responses related to PFM exercise knowledge, PFM exercise importance plus PFM exercise commitment. The production of each index required its own calculation to be formulated so that its data could be properly tabulated. This table also included the source or item number of the data relevant to each index plus a description of what each index represents.

Table 16. Averaging PFDI-20 Items: Method 1 versus Method 2

This table depicts the differing outcomes when following the traditional calculation of Method 1 for analyzing the PFDI-20 data versus the alternative calculation of Method 2. For Method 1, each of the three scales, POPDI, CRADI and UDI are given equal weight, however, in Method 2, each of the 20 items on the scale are given equal importance. If each of the three scales on the PFDI-20 contained equal number of items, then the results would not differ between each methodology. But because the POPDI scale includes six items, CRADI contains eight items and the UDI incorporates the final six items, the choice of method will impact the resultant outcome. This table illustrates the differing results by using random responses for all 20 items and analyzing the data with both methods.

Table 17. Demographics of Participants

This table represents the Chi Square analysis of each participant demographic variable examined. While the p-values for the numerous demographics varied, there were

no significant findings noted in any of the 15 variables. With regard to the demographic age in years, Chi Square=1.3571 with p=0.995 (DF=8), i.e. the probability that the groups were homogeneous in age is greater than 99%. When comparing the educational background of the participants, Chi Square=18.2601 with p=0.108 (DF=12), again as p>0.05, significant difference in education between the groups was not identified. When marital status was examined, Chi Square=9.5702 with p=0.296 (DF=8), and therefore, no significant difference was noted between the groups. The groups were also compared for the demographic of income. For this, Chi Square=5.4393, and p=0.710 (DF=8) showing no significant difference in income, between the three groups. Race was also compared, with Chi Square=3.0937, p=0.928 (DF=8) and, therefore, the probability of the three groups being homogenous with regard to race is more than 92%. The overall health of the three groups had a Chi Square=0.9313 and p=0.920 (DF=4) so no significant difference was noted.

Obstetrical demographics were also analyzed, with 'number of pregnancies', 'number of vaginal deliveries' and 'number of caesarean sections' showing no significant difference between the groups with Chi Square=9.0960, p=0.523 (DF=10), Chi Square=9.3404, p=0.500 (DF=10), and Chi Square=4.4769, p=0.612 (DF=6), respectively. Furthermore, several birthing interventions experienced were compared such as 'epidural', 'episiotomy', ' perineal tear', 'vacuum extraction', and 'forceps extraction'. No significant differences were identified between the groups for any of the interventions, with Chi Square=1.0071, p=0.604 (DF=2), Chi Square=2.2668, p=0.322 (DF=2), Chi Square=0.1316, p=0.936 (DF=2), and, Chi Square=2.0969, p=0.350 (DF=2), Chi Square=0.7659, p=0.682 (DF=2), respectively.

The final demographic evaluated was comparison of the menstrual stages within Groups A, B and C. With Chi Square=5.5611, p=0.696 (DF=8), no significant difference between the three groups was identified for this variable.

In none of the 15 demographic variables assessed, was a significant p-value noted (re: age, education, marital status, income, race, health, pregnancies, vaginal and caesarean section deliveries, epidural, episiotomy, perineal tear, vacuum and forceps extraction, and menstrual stage of the three study groups).

Table 18. Total Birthing Interventions of Participants: ANOVA

This table represents the one-way ANOVA analysis used to compare the total birthing interventions experienced by participants in Groups A, B and C. The F-value of 0.56 (DF=2, 142) was not significant, and therefore, no Tukey post-hoc testing was needed. These results indicate that no significance between the three groups with regard to the total number of birthing interventions (p=0.571) was detected.

Table 19. PIKQ Results: Non-Parametric Testing

This table represents the non-parametric tests used to evaluate the PIKQ data at Time 1, Time 2 and Time 3. Kruskal-Wallis tests were used at all three times to compare Groups A, B and C. When significance was noted, as at Times 2 and 3, post-hoc Mann-Whitney U tests were used to compare each pair of Groups so as to determine where the significant findings occurred. Finally, Wilcoxon Signed Rank tests were used to compare all participants combined between Time 1 and Time 2, Time 2 and Time 3, and finally, Time 1 and Time 3.

At Time 1 the Kruskal-Wallis p-value found no significance at $p=0.461$. As no significance was found, post-hoc testing was not needed. At Time 2, the Kruskal-Wallis test comparing the PIKQ results of the three groups resulted in a highly significant p-value of $p<0.001$. To determine which groups were responsible for this significance, post-hoc Mann-Whitney U tests were implemented, comparing each pair of groups. Groups A versus B resulted in $p=0.508$, showing no significance. Groups A versus C; however, resulted in a highly significant p-value of $p<0.001$. The same highly significant results of $p<0.001$ were noted when Group B was compared to the control group, Group C (with the means of Group A and Group B both significantly higher than the mean of Group C).

Time 3 Kruskal-Wallis testing produced another highly significant p-value of $p<0.001$. To determine which groups were responsible for this significance, post-hoc Mann-Whitney U tests were again completed, comparing each pair of groups. Groups A versus C, and Groups B versus C again resulted in a highly significant p-value, $p<0.001$, proving significant difference between these pairs of groups. The difference at Time 3 was noted; however, during the comparison of Groups A and B as this test resulted in a highly significant finding of $p<0.001$ (with the mean of Group A significantly higher than Group B, and both significantly higher than Group C).

Wilcoxon Signed Rank tests were used to compare the results of all participants combined, over time. When Time 1 results ($n=145$) were compared to Time 2 results ($n=145$), significant difference was shown, with $p<0.001$ results. These same highly significant results were produced when Time 2 was compared to Time 3 ($n=145$), and again, when Time 1 was compared to Time 3. For all three Wilcoxon Signed Rank tests

p<1% (with Time 3 significantly higher than Time 2, and Time 2 significantly higher than Time 1).

Table 19a. PIKQ-Incontinence Results: Non-Parametric Testing

This table represents the non-parametric tests used to evaluate the PIKQ-Incontinence data at Time 1, Time 2 and Time 3. Kruskal-Wallis tests were used at all three times to compare Groups A, B and C. When significance was noted, as at Times 2 and 3, post-hoc Mann-Whitney U tests were used to compare each pair of Groups so as to determine where the significant findings occurred. Finally, Wilcoxon Signed Rank tests were used to compare all participants combined between Time 1 and Time 2, Time 2 and Time 3, and finally, Time 1 and Time 3.

At Time 1, the Kruskal-Wallis test was found to be not significant, at p=0.300. As such no post-hoc testing was necessary. At Time 2, a Kruskal-Wallis test compared the PIKQ-Incontinence results of the three groups. This test produced a highly significant p-value of p<0.001. To determine which groups were responsible for this significance, post-hoc Mann-Whitney U tests were completed, comparing each pair of groups. Groups A versus B resulted in a non-significant p=0.591. Groups A versus C resulted in p<0.001 proving significant difference between these two groups (with Group A significantly higher than Group C). As expected, the same highly significant results of p<0.001 were noted when Group B was compared to Group C (with Group B significantly higher than Group C).

At Time 3, Kruskal-Wallis testing compared the PIKQ-Incontinence responses of Groups A, B and C. This produced another highly significant p-value of p<0.001. To determine which groups were responsible for this significance, post-hoc Mann-Whitney

U tests were completed, comparing each pair of groups. This time, at Time 3, Groups A versus B resulted in a highly significant finding of $p<0.001$. Groups A versus C, and Groups B versus C also resulted in $p<0.001$ proving significant difference between these two groups. The mean of Group A was significantly higher than the mean of Group B, and both were significantly higher than the mean of Group C.

Wilcoxon Signed Rank tests were used to compare Time 1 results to Time 2 results (of all three groups combined, n=145), and significant difference was shown, with $p<0.001$ results. This same highly significant result was produced when Time 1 was compared to Time 3 (n=145); however, when the incontinence-related knowledge data was compared from Time 2 to Time 3, a non-significant Wilcoxon-Signed Rank result of $p=0.362$ was produced. The means of Time 3 and Time 2 was significantly higher than the mean of Time 1, but the mean of Time 3 was not significantly higher than the mean at Time 2.

Table 19b. PIKQ-POP Results: Non-Parametric Testing

This table represents the non-parametric tests used to evaluate the PIKQ-POP data at Time 1, Time 2 and Time 3. Kruskal-Wallis tests were used at all three times to compare Groups A, B and C. When significance was noted, as at Times 2 and 3, post-hoc Mann-Whitney U tests were used to compare each pair of Groups so as to determine where the significant findings occurred. Finally, Wilcoxon Signed Rank tests were used to compare all participants combined between Time 1 and Time 2, Time 2 and Time 3, and finally, Time 1 and Time 3.

Kruskal-Wallis test at Time 1, was not significant with $p=0.807$. As such no post-hoc testing was needed. At Time 2, a Kruskal-Wallis test compared the PIKQ-POP

results of the 3 groups resulting in a highly significant p-value of $p<0.001$. To determine which groups were responsible for this significance, post-hoc Mann-Whitney U tests were used, comparing each pair of groups. Groups A versus B resulted in $p=0.259$, no significance. Groups A versus C resulted in $p<0.001$ proving significant difference between these two groups. The same highly significant results of $p<0.001$ were noted when Group B was compared to Group C. The means of Groups A and B were both significantly higher than the mean of Group C.

At Time 3, Kruskal-Wallis testing compared the responses of Groups A, B and C producing another highly significant p-value of $p<0.001$. To determine which groups were responsible for this significance, post-hoc Mann-Whitney U tests were completed comparing each pair of groups. This time, at Time 3, Groups A versus B resulted in a highly significant finding of $p<0.001$ (with the mean of Group A being significantly higher than the mean of Group B). As expected Groups A versus C, and Groups B versus C also resulted in $p<0.001$ proving significant difference between these two groups as the means of Groups A and B were both significantly higher than the mean of Group C.

Wilcoxon Signed Rank tests were used to compare the results of all participants combined, over time. When Time 1 results were compared to Time 2 results (of all three groups combined, $n=145$), significant difference was shown, with $p<0.001$. These same highly significant results were determined when Time 2 was compared to Time 3, and again, when Time 1 was compared to Time 3. For all three Wilcoxon Signed Rank tests, $p<1\%$ as the mean increased significantly from Time 1 to Time 2, and again from Time 2 to Time 3.

Table 20. PIKQ Results: ANOVA

This table represents the ANOVA results and post-hoc Tukey tests for significant F-values, with regard to the Index PIKQ showing highly significant findings. When comparisons were made between 'Groups' A (n=144), B (n=144) and C (n=147), highly significant findings of $F=66.48$, $p<0.001$ (DF=2, 142), were noted. Post-hoc Tukey tests were used to compare the pairs of groups to determine where the significance was created. While comparison of Groups A and B produced non-significant findings, Tukey tests of Groups A versus C and B versus C both produced highly significant p-values of $p<0.001$ (as the means of both Groups A and B were significantly higher than the mean of Group C).

These same highly significant results were determined by comparing the three 'Times' throughout the study (n=145), with $F=325.94$, $p<0.001$ (DF=2, 284). Post-hoc Tukey testing showed $p<0.001$ results for all pair comparisons, Time 1 versus Time 2, Time 1 versus Time 3 and Time 2 versus Time 3 (as the scores significantly increased over time).

While the highly significant findings for 'Groups' and 'Times' of the PIKQ data are notable, the important contribution offered by ANOVA is its analysis of the interaction effect between 'Times' and 'Groups' (Time x Group).

With regard to the PIKQ data, the Time x Group interaction produced highly significant findings of $F=71.42$, $p<0.001$ (DF=4, 284). Post-hoc Tukey tests of the interactions noted highly significant increases over time, $p<0.001$, when compared from Time 1 and Time 2, Time 1 and Time 3, and again for Time 2 and Time 3, for Group A. For Group B, interactions showed significant increases over time ($p<0.001$) for Time 1

versus Time 2 and Time 1 versus Time 3; however, no significant difference was noted when comparing Time 2 versus Time 3 for this group. Finally, Group C showed no significant interactions between any of the three pairs of time comparisons.

The Tukey post-hoc tests comparing Group A to Group B, Group A to Group C and Group B to Group C at Time 1, understandably, showed no significant results. When these pairs of groups were compared at Time 2, no significance was noted between Groups A and B; however, $p<0.001$ results were determined during comparisons of Groups A and C and again for Groups B and C (with the means of Groups A and B being significantly higher than the mean of Group C). Finally, when the groups were compared at Time 3, Groups A versus B showed significant differences, with $p<0.05$, while Groups A versus C and Groups B versus C again showed highly significant findings of $p<0.001$ (with the mean of Group A being significantly higher than Group B, and both being significantly higher than Group C).

Table 20a. PIKQ-Incontinence Results: ANOVA

This table represents the ANOVA results and post-hoc Tukey tests for significant F-values, with regard to the Index PIKQ-Incontinence showing highly significant findings. When comparisons were made between 'Groups' A (n=144), B (n=144) and C (n=147), highly significant findings of $F=34.71$, $p<0.001$ (DF=2, 142), were noted. Post-hoc Tukey tests were used to compare the pairs of groups to determine where the significance was created. While comparison of Groups A and B produced non-significant findings, Tukey tests of Groups A versus C and B versus C both produced highly significant p-values of $p<0.001$ (with the means of Groups A and B being significantly higher than the mean of Group C).

These same highly significant results were determined by comparing the three 'Times' throughout the study (n=145), with F=175.30, $p<0.001$ (DF=2, 284). Post-hoc Tukey testing showed $p<0.001$ results for pair comparisons with Time 1 being significantly higher than Time 2, Time 1 being significantly higher than Time 3; however, unlike the PIKQ data Time 2 versus Time 3 results were not significant.

More importantly, with regard to the Time x Group interactions produced highly significant findings of F=42.21, $p<0.001$ (DF=4, 284). Post-hoc Tukey tests of the Times interactions for Group A showed highly significant changes, $p<0.001$, with Time 2 being significantly higher than Time 1, and Time 3 being significantly higher than Time 1. However, when comparing Time 2 versus Time 3, the re-education did not show significant findings for the PIKQ-Incontinence data. The Group B interactions of Times showed p-values of $p<0.001$, with Time 2 being significantly higher than Time 1 and Time 3 being significantly higher than Time 1; however, no significant difference was noted when comparing Time 2 versus Time 3 for this group. Finally, Group C showed no significant interactions for any of the three pairs of time comparisons.

The Tukey post-hoc tests comparing Group A to Group B, Group A to Group C and Group B to Group C at Time 1, understandably, showed no significant results. When these pairs of groups were compared at Time 2, no significance was noted between Groups A and B; however, $p<0.001$ results were determined during comparisons of Groups A and C and again for Groups B and C (with both means of Groups A and B being significantly higher in incontinence knowledge compared to Group C). Finally, when the groups were compared at Time 3, Groups A versus B showed no significant differences, while Groups A versus C and Groups B versus C again showed highly

significant findings of $p<0.001$ (with both means of Groups A and B being significantly higher in incontinence knowledge compared to Group C).

Table 20b. PIKQ-POP Results: ANOVA

This table represents the ANOVA results and post-hoc Tukey tests for significant F-values, with regard to the Index PIKQ-POP showing highly significant findings. When comparisons were made between the 'Groups' A (n=144), B (n=144) and C (n=147), highly significant findings of $F=75.54$, $p<0.001$ (DF=2, 142), were noted. Post-hoc Tukey tests were used to compare the pairs of groups to determine where the significance was created. While comparison of Groups A and B produced non-significant findings, Tukey tests of Groups A versus C and B versus C both produced highly significant p-values of $p<0.001$ (with both means of Groups A and B being significantly higher in POP knowledge compared to Group C).

These same highly significant results were determined by comparing the three 'Times' throughout the study (n=145), with $F=324.67$, $p<0.001$ (DF=2, 284). Post-hoc Tukey testing showed $p<0.001$ results for all three pair comparisons of Time 1 versus Time 2, Time 1 versus Time 3 and Time 2 versus Time 3, as the POP knowledge continued to significantly increase over time.

More importantly, with regard to the Time x Group interactions produced highly significant findings of $F=64.89$, $p<0.001$ (DF=4, 284). Post-hoc Tukey tests of the interactions comparing Time 1 and Time 2 for Group A showed highly significant increase of $p<0.001$, (with Time 2 being significantly higher than Time 1), Time 1 and Time 3 (with Time 3 being significantly higher than Time 1), and again when comparing Time 2 versus Time 3 (with Time 3 being significantly higher than Time 2), identifying

that re-education produced significant findings for the PIKQ-POP data. The Group B interactions showed p-values of $p<0.001$ for Time 1 versus Time 2, Time 1 versus Time 3, and again at Time 2 versus Time 3, as the mean of Group B significantly increased over time. Finally, Group C showed no significant interactions for comparisons of Time 1 versus Time 2, and, Time 1 versus Time 3; however, comparison of the control groups' Time 2 versus Time 3 PIKQ-POP data showed a significant difference with $p<0.05$.

The Tukey post-hoc tests comparing Group A to Group B, Group A to Group C and Group B to Group C at Time 1, understandably, showed no significant results. When these pairs of groups were compared at Time 2, no significance was noted between Groups A and B; however, $p<0.001$ results were determined during comparisons of Groups A and C and again for Groups B and C (with the means of Groups A and B being significantly higher than the mean of Group C). Finally, when the groups were compared at Time 3, Groups A versus B showed significant difference with $p<0.05$, while Groups A versus C and Groups B versus C again showed highly significant findings of $p<0.001$ (with the mean of Group A being significantly higher than the mean of Group B, and both being significantly higher than the mean of Group C).

Table 21a. PIKQ-Incontinence Results: Descriptive Analysis

This table depicts the 12 incontinence-related knowledge items scores, allowing 'outliers', or items most often answered incorrectly, to be identified. While overall, incontinence-related knowledge level at Time 1 was very low at 55% (968/1740), two questions resulted in notably low responses compared to the remaining questions. "Some medications may cause urinary incontinence." is a correct statement; however, only 25% of the participants knew this fact. As well, "Doctors can do special types of bladder

testing to diagnose urine leakage." is also a correct statement and received a similarly low awareness score of 26%. This information becomes important when educating patients as well as during efforts to raise public awareness, while the overall incontinence knowledge was quite low, these areas identified were even more so.

Furthermore, three other questions received notably low scores and are worthy of identification for special attention when educating patients or the general public, especially since two items pertain specifically to understanding and appreciating that incontinence is correctable. "Most people who leak urine can be cured or improved with some kind of treatment." is a true statement that less than half of the participants correctly answered (scored 68 of 145). Only 47% of the participants knew that incontinence was treatable. Furthermore, for the incorrect statement that, "Surgery is the only treatment for urinary leakage." only 71 (49%) recognized this as false showing that approximately half of the respondents did not feel that their own actions would have any positive impact on the dysfunction. Another disturbing finding was regarding the erroneous statement that, "Once people start to leak urine, they are never able to control their urine again." with only 75 of 145 participants believing this was false. While the overall scores related to incontinence knowledge are low, these outliers draw attention to the fact that most participants did not know that incontinence is curable and correctable, nor were they aware that medical treatments other than surgery exist.

When reviewing the data of the intervention-participants (Groups A and B only) from Time 3, it is important to note that the items receiving the highest correct scores were, "Certain exercises can be done to help to control urine leakage." (100%), "Giving birth many times may lead to urine leakage." (100%), "Other than pads and diapers, not

much can be done to treat leakage of urine." (99%), and, "Once people start to leak urine, they are never able to control their urine again." (99%). The first statement is correct and with 100% of the participants who received the pelvic floor health education now recognizing that exercise can help bladder control, including the control population who did not receive the education intervention, the research was successful in imparting this critical education message. The second statement is also correct and highlights the need for PFM attention post-partum. The third and fourth statements are incorrect and these high scores reflect the removal of society's commonly believed fallacies that once you experience urinary incontinence, it can never be corrected and the only option is use of incontinence products.

Table 21b. PIKQ-POP Results: Descriptive Analysis

This table depicts the 12 POP-related knowledge items scores, allowing 'outliers', or items most often answered incorrectly, to be identified. While the overall POP-related knowledge items was extremely low at 27%(Total=468/1740), notable outliers at Time 1 were the correct statements that, "A rubber ring called a pessary can be used to treat symptoms of pelvic organ prolapse." (7%) and, "Heavy lifting on a daily basis can lead to pelvic organ prolapse." (11%) and the incorrect statement that, "Doctors can run a blood test to diagnose pelvic organ prolapse." (9%). At Time 3, the statements answered most-correctly by those participants in Groups A and B (those having received the pelvic floor health education) were, "A good way for a doctor to diagnose pelvic organ prolapse is by examining the patient." (99%), "Giving birth many times may lead to pelvic organ

prolapse." (99%), "Pelvic organ prolapse can happen at any age." (99%), "Symptoms of pelvic organ prolapse may include pelvic heaviness and/or pressure." (100%), and, "Certain exercises can help to stop pelvic organ prolapse from getting worse." (98%), with all of these items being 'true'. The incorrect statement best answered at Time 3 by those participants receiving the education session(s) was, "Once a patient has pelvic organ prolapse, not much can be done to help her." (97%).

At the conclusion of the study, all intervention-participants (Groups A and B) showed a score total of 96% for incontinence-related knowledge and 94% for POP-related knowledge. Both content areas showed dramatic improvements between Time 1 to Time 3.

Table 22. PFDI-20(+2): Validating PFD Domains: Cronbach's Alpha

This table depicts the Cronbach's alpha determined for the five PFDI-20(+2) domains. Cronbach's alpha is used to assess internal consistency of the domains, within the PFDI-20(+2). The alpha value was determined for Domain Bladder Dysfunction, Bowel Dysfunction, POP and Pelvic Pain. In the case of Domain Sexual Dysfunction, ordinal-level data provided for analysis and, therefore, Polychoric Correlation was determined for analysis rather than Cronbach's alpha.

Of the 22 items related to PFD symptoms, several items provided relevant information regarding more than one domain. Because of this, some items were evaluated in the analysis of multiple PFD Domains, as appropriate.

For Domain Bladder Dysfunction, seven of the 22 items provided information related to bladder issues (PFDI05, PFDI06, PFDI15, PFDI16, PFDI17, PFDI18, and

PFDI19). From these items, Cronbach's Coefficient Alpha was determined with alpha=0.756822 at Time 1 and alpha=0.795831 at Time 3. While these alphas show a good level of consistency within the domain, it should be noted that removal of PFDI06 would further increase the alpha to 0.768181 for Time 1 and 0.820349 at Time 3. However, item 6, "Do you ever have to push up on a bulge in the vaginal area with your fingers to start or complete urination?" offers important clinical information that benefits the tool.

Domain Bowel Dysfunction is based on information received from nine of the 22 items (PFDI04, PFDI07, PFDI08, PFDI09, PFDI10, PFDI11, PFDI12, PFDI13 and PFDI14). From these items, Cronbach's Coefficient Alpha was determined with alpha=0.821889 at Time 1 and alpha=0.826119 at Time 3. While these alphas show a good level of consistency within the domain, it should be noted that removal of PFDI09 would further increase the alpha to 0.822095 for Time 1 and 0.844376 at Time 3. That noted, item 9, "Do you usually lose stool beyond your control if stool is well formed?" offers critical clinical information that offsets the benefit of the slight increase in alpha value upon its removal.

Domain POP was created from seven of the 22 items (PFDI01, PFDI02, PFDI03, PFDI04, PFDI05, PFDI06 and PFDI14). From these items, Cronbach's Coefficient Alpha was determined with alpha=0.706976 at Time 1 and alpha=0.800004 at Time 3. While these alphas show a good level of consistency within the domain, it should be noted that removal of PFDI05 would further increase the alpha to 0.719134 for Time 1. As in the other items identified as positively impacting the alpha value with its deletion from the tool, the item "Do you usually experience a feeling of incomplete bladder emptying?"

offers important clinical value and should not be removed. This again is the case for the deletion of PFDI06 as this would increase the Time 3 alpha of Domain POP slightly, to alpha=0.815835.

Domain Pelvic Pain is comprised of three of the 22 items (PFDI12, PFDI20 and PFDI21). From these items, Cronbach's Coefficient Alpha was determined with alpha=0.530687 at Time 1 and alpha=0.588721 at Time 3. While these alphas show a decent level of consistency within the domain, it should be noted that removal of PFDI12 would further increase the alpha to 0.568292 for Time 1. This again would not be recommended from a clinical standpoint as, "Do you usually have pain when you pass your stool?" gleans important subjective information beneficial for assessment and treatment.

The final scale, Domain Sexual Dysfunction, was comprised of the two items added to the original and previously validated 20 items, PFDI21 and PFDI22. The polychoric correlation was found to equal 0.5373 at Time 1 and 0.6413 at Time 3, and therefore, determined to have a decent level of consistency.

All five PFD domains showed acceptable consistency with some items identified for removal if an increase of alpha was needed. Having said that, each item identified for removal to increase the alpha value was further recognized for its important critical contribution. Furthermore, the tool demonstrated constancy from Time 1 to Time 3 as the values decently agree over the passage of time.

Table 23. PFDI-20 (Pelvic Floor Distress Inventory): ANOVA

This table details the ANOVA analysis of the Index PFDI-20 data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). With

regard to the PFDI-20 data, the Time x Group interaction produced highly significant findings of $F=17.18$, $p<0.001$ (DF=2, 142). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was highly significant with $p<0.001$ for Time 1 versus Time 3. Group B was also highly significant with $p<0.001$ for Time 1 versus Time 3 (with the means significantly decreasing over time). As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this time. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, both Tukey tests for Group A versus Group C, as well as, Group B versus Group C, noted highly significant findings with $p<0.001$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 23a. UDI (Bladder Dysfunction Domain from PFDI-20): ANOVA

This table details the ANOVA analysis of the Index UDI, the bladder dysfunction domain of the PFDI-20, collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The PFDI-20 was divided into three domains and each was analyzed independently with ANOVA testing and post-hoc Tukey tests for significant findings. With regard to bladder dysfunction domain of the PFDI-20, or UDI, the Time x Group interaction produced highly significant findings of $F=11.78$, $p<0.001$ (DF=2, 142).

Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was highly significant with $p<0.001$ for Time 1 versus Time 3. Group B was also highly significant with $p<0.001$ for Time 1 versus Time 3. The means of both Groups A and B significantly decreased over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, Tukey post-hoc testing for Group A versus Group C noted highly significant findings with $p<0.001$ and post-hoc Tukey tests comparing Group B and Group C resulted in significant findings with $p<0.01$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 23b. CRADI (Bowel Domain from PFDI-20): ANOVA

This table details the ANOVA analysis of the PFDI-20 Domain Bowel Dysfunction, Index CRADI, collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). For the bowel dysfunction domain of the PFDI-20, or CRADI, the Time x Group interaction produced highly significant findings of $F=6.65$, $p<0.01$ (DF=2, 142). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was significant with $p<0.01$ for Time 1 versus Time 3. Group B was also significant with $p<0.01$ for Time 1 versus Time 3. The means of Groups A

and B both significantly lowered over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, Tukey post-hoc testing for Group A versus Group C noted significant findings with $p<0.01$, as did post-hoc Tukey tests comparing Group B and Group C ($p<0.01$) (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 23c. POPDI (POP Domain from PFDI-20): ANOVA

This table details the ANOVA analysis of the Index POPDI (POP domain of the PFDI-20) collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The prolapse domain of the PFDI-20, or POPDI, data was analyzed using ANOVA and the Time x Group interaction produced highly significant findings of $F=14.31$, $p<0.001$ ($DF=2, 142$). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was significant with $p<0.001$ for Time 1 versus Time 3. Group B was also significant with $p<0.05$ for Time 1 versus Time 3. Both the means of Groups A and B decreased significantly over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, Tukey post-hoc testing for Group A versus Group C noted highly significant findings with $p<0.001$, as did post-hoc Tukey tests comparing Group B and Group C, $p<0.001$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 24. PFDI-20 Weighted: ANOVA

This table details the ANOVA analysis of the Index PFDI-20 Weighted collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). With regard to the PFDI-20 Weighted data where each of the 20 items was given equal weight (as opposed to each of the three domains equally weighted as in PFDI-20), the Time x Group interaction again produced highly significant findings of $F=16.45$, $p<0.001$ ($DF=2, 142$). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was highly significant with $p<0.001$ for Time 1 versus Time 3. Group B was also highly significant with $p<0.001$ for Time 1 versus Time 3. The means of both Groups A and B significantly decreased over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A

versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had yet been implemented. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, both Tukey tests for Group A versus Group C, as well as, Group B versus Group C, noted highly significant findings with $p<0.001$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 25. PFDI-20(+2): ANOVA

This table details the ANOVA analysis of the Index PFDI-20(+2) collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). With the additional two items evaluating the presence of sexual dysfunction symptoms, the Time x Group interaction again produced highly significant findings of $F=18.42$, $p<0.001$ ($DF=2, 142$). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was highly significant with $p<0.001$ for Time 1 versus Time 3. Group B was also highly significant with $p<0.001$ for Time 1 versus Time 3.The means of both Groups A and B significantly decreased over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had yet been implemented. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between

this pair of study groups; however, both Tukey tests for Group A versus Group C, as well as, Group B versus Group C, noted highly significant findings with $p<0.001$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 25a. Domain Bladder Dysfunction from PFDI-20(+2): ANOVA

This table details the ANOVA analysis of the Index Bladder Dysfunction (PFDI-20(+2); Domain Bladder Dysfunction) collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). With regard to Index Bladder Dysfunction of the PFDI-20(+2), the Time x Group interaction produced highly significant findings of $F=5.62$, $p<0.001$ (DF=2, 142). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was significant with $p<0.001$ for Time 1 versus Time 3. Group B was also significant with $p<0.001$ for Time 1 versus Time 3. The means of Groups A and B both decreased significantly over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, Tukey post-hoc testing for Group A versus Group C noted significant findings with $p<0.001$ and post-hoc Tukey tests comparing

Group B and Group C also resulted in significant findings with $p<0.001$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 25a-i. Bladder Obstruction: ANOVA

This table details the ANOVA analysis of the PFDI-20(+2), Domain Bladder Dysfunction, sub-category Bladder Obstruction data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). For the Index Bladder Obstruction, the Time x Group interaction produced highly significant findings of $F=12.18$, $p<0.001$ (DF=2, 142). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was highly significant with $p<0.001$ for Time 1 versus Time 3 (with its mean decreasing significantly from Time 1 to Time 3); however, Group B showed no significant difference between Time 1 and Time 3. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, Tukey post-hoc testing for Group A versus Group C noted highly significant findings with $p<0.001$ and post-hoc Tukey tests comparing Group B and Group C also resulted in significant findings with $p<0.01$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 25a-ii. Urinary Frequency: ANOVA

This table details the ANOVA analysis of the second of the three Domain Bladder Dysfunction of the PFDI-20(+2) sub-categories, Urinary Frequency, comparing Group A (n=48), Group B (n=48) and Group C (n=49). For the Index Urinary Frequency, the Time x Group interaction again produced highly significant findings of $F=12.63$, $p<0.001$ (DF=2, 142). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A significantly decreased ($p<0.001$) from Time 1 to Time 3; however, Group B showed no significant difference between Time 1 and Time 3. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted significant difference with $p<0.05$ at Time 3 (with the mean of Group A being significantly lower than the mean of Group B). Tukey post-hoc testing for Group A versus Group C noted highly significant findings with $p<0.001$ at Time 3 (with the mean of Group A being significantly lower than the mean of Group C); however, post-hoc Tukey tests comparing Group B and Group C resulted in non-significant difference between these study groups.

Table 25a-iii. Urinary Incontinence (Stress + Urgency): ANOVA

This table details the ANOVA analysis of the third of the three Domain Bladder Dysfunction of the PFDI-20(+2) sub-categories, Index Urinary Incontinence collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). For the sub-category Urinary Incontinence, the Time x Group interaction again produced highly significant findings of $F=7.55$, $p<0.001$ (DF=2, 142). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was highly significant with $p<0.001$ for Time 1 versus Time 3 as was Group B with $p<0.001$, resulting in highly significant difference between Time 1 and Time 3. The means of both Groups A and B decreased significantly over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between these groups at Time 3. Tukey post-hoc testing for Group A versus Group C noted significant findings with $p<0.01$ at Time 3 and post-hoc Tukey tests comparing Group B and Group C resulted in significant differences between these study groups with $p<0.05$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 25a-iii-i. Stress Urinary Incontinence: ANOVA

This table details the ANOVA analysis of the sub-sub-category, Stress Urinary Incontinence, data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The third of three sub-categories within the Domain Bladder Dysfunction of the PFDI-20(+2), is Urinary Incontinence. This sub-category was further sub-divided into 2 sub-sub-categories; Stress Urinary Incontinence and Urgency Urinary Incontinence. For the Index Stress Urinary Incontinence, the Time x Group interaction produced significant findings of $F=4.41$, $p<0.05$ ($DF=2, 142$). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was significant with $p<0.05$ for Time 1 versus Time 3 as did Group B with $p<0.05$. The means of both Groups A and B decreased significantly over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. Interestingly, following the interventions, when the pairs of groups were compared at Time 3, still no significant differences were detected with post-hoc Tukey testing comparing Group A and Group B, Group A versus Group C, nor was significant difference noted with comparison of Group B versus Group C.

Table 25a-iii-ii. Urinary Urgency Incontinence: ANOVA

This table details the ANOVA analysis of the Urinary Urgency Incontinence data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The third of three sub-categories with the Domain Bladder Dysfunction of the PFDI-20(+2), is Urinary Incontinence. This sub-category was further sub-divided into 2 sub-sub-categories; Stress Urinary Incontinence and Urinary Urgency Incontinence. For the Index Urinary Urgency Incontinence, the Time x Group interaction produced significant findings of $F=5.61$, $p<0.01$ ($DF=2, 142$). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was significant with $p<0.01$ for Time 1 versus Time 3 (with its mean significantly decreasing over time); however, Group B did not have a significant difference between Time 1 and Time 3. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. Following the interventions, when the pairs of groups were compared at Time 3, still no significant differences were detected with post-hoc Tukey testing comparing Group A and Group B; however, significant differences were noted with comparison of Group B versus Group C ($p<0.01$), and Group A versus Group C, $p<0.05$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 25b. Domain Bowel Dysfunction from PFDI-20(+2): ANOVA

This table details the ANOVA analysis of the PFDI-20(+2); Domain Bowel Dysfunction data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). With regard to Index Bowel Dysfunction, the Time x Group interaction produced highly significant findings of $F=5.98$, $p<0.01$ (DF=2, 142). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was significant with $p<0.01$ for Time 1 versus Time 3. Group B was also significant with $p<0.01$ for Time 1 versus Time 3. The means of both Groups A and B decreased significantly over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, Tukey post-hoc testing for Group A versus Group C noted significant findings with $p<0.01$ and post-hoc Tukey tests comparing Group B and Group C also resulted in significant findings with $p<0.01$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 25b-i. Bowel Obstruction: ANOVA

This table details the ANOVA analysis of the Bowel Obstruction data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). Domain Bowel Dysfunction of the PFDI-20(+2) was divided into three sub-categories. For the Index Bowel Obstruction, the Time x Group interaction produced significant findings of $F=5.35$, $p<0.01$ (DF=2, 142). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was significant with $p<0.01$ for Time 1 versus Time 3. Group B showed the same significant difference between Time 1 and Time 3, with $p<0.01$ as well. The means of both Groups A and B decreased significantly over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, Tukey post-hoc testing for Group A versus Group C noted significant findings with $p<0.01$ and post-hoc Tukey tests comparing Group B and Group C also resulted in significant findings with $p<0.01$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 25b-ii. Bowel Urgency: ANOVA

This table details the ANOVA analysis of the Bowel Urgency data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The second of three sub-categories with the Domain Bowel Dysfunction of the PFDI-20(+2), is Bowel Urgency. For the Index Bowel Urgency, the Time x Group interaction again produced significant findings of $F=4.30$, $p<0.05$ ($DF=2, 142$). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was significant with $p<0.05$ for Time 1 versus Time 3, as was Group B with $p<0.05$. The means of both Groups A and B decreased significantly over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference at Time 3. Tukey post-hoc testing for Group A versus Group C noted significant findings with $p<0.05$ at Time 3, as did post-hoc Tukey tests comparing Group B and Group C resulted, $p<0.05$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 25b-iii. Bowel Incontinence (Flatual + Fecal): ANOVA

This table details the ANOVA analysis of the Bowel Incontinence data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The third of three sub-categories with the Domain Bowel Dysfunction of the PFDI-20(+2), is Bowel Incontinence. For the Index Bowel Incontinence, the Time x Group interaction produced non-significant findings. As such, no post-hoc Tukey tests were indicated.

Table 25b-iii-i. Flatual Incontinence: ANOVA

This table details the ANOVA analysis of the Flatual Incontinence data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The third of three sub-categories within the Domain Bowel Dysfunction of the PFDI-20(+2), is Bowel Incontinence. This sub-category was further sub-divided into 2 sub-sub-categories; Flatual Incontinence and Fecal Incontinence. For the Index Flatual Incontinence, the Time x Group interaction produced non-significant findings. As such, no post-hoc Tukey tests were indicated.

Table 25b-iii-ii. Fecal Incontinence: ANOVA

This table details the ANOVA analysis of the Fecal Incontinence data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The third of the three sub-categories with the Domain Bowel Dysfunction of the PFDI-20(+2), is Bowel Incontinence. This sub-category was further sub-divided into 2 sub-sub-categories; Flatual Incontinence and Fecal Incontinence. For the Index Fecal

Incontinence, the Time x Group interaction produced non-significant findings. As such, no post-hoc Tukey tests were indicated.

Table 25c. Domain POP from PFDI-20(+2): ANOVA

This table details the ANOVA analysis of the Domain POP data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). With regard to Index POP of the PFDI-20(+2), the Time x Group interaction produced highly significant findings of $F=13.02$, $p<0.001$ (DF=2, 142). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was highly significant with $p<0.001$ for Time 1 versus Time 3. Group B was also significant with $p<0.01$ for Time 1 versus Time 3. The means of both Groups A and B significantly decreased over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, Tukey post-hoc testing for Group A versus Group C noted highly significant findings with $p<0.001$ and post-hoc Tukey tests comparing Group B and Group C also resulted in significant findings with $p<0.01$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 25d. Domain Pelvic Pain from PFDI-20(+2): ANOVA

This table details the ANOVA analysis of the Domain Pelvic Pain data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The PFDI-20(+2) was divided into five domains with its fourth domain related to pelvic pain. With regard to Index Pelvic Pain of the PFDI-20(+2), the Time x Group interaction produced significant findings of $F=4.98$, $p<0.01$ ($DF=2, 142$). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was significant with $p<0.01$ for Time 1 versus Time 3. Group B was also significant with $p<0.01$ for Time 1 versus Time 3. The means of both Groups A and B decreased significantly over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, Tukey post-hoc testing for Group A versus Group C noted significant findings with $p<0.01$ and post-hoc Tukey tests comparing Group B and Group C also resulted in significant findings with $p<0.01$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 25e. Domain Sexual Dysfunction of PFDI-20(+2): ANOVA

This table details the ANOVA analysis of the Domain Sexual Dysfunction data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The PFDI-20(+2) was divided into five domains with its fifth domain related to symptoms of sexual dysfunction. With regard to Index Sexual Dysfunction, the Time x Group interaction produced highly significant findings of $F=10.31$, $p<0.001$ ($DF=2, 142$). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. Group A was highly significant with $p<0.001$ for Time 1 versus Time 3. Group B was also highly significant with $p<0.001$ for Time 1 versus Time 3. The means of both Groups A and B significantly decreased over time. As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had been implemented at this point. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, Tukey post-hoc testing for Group A versus Group C noted highly significant findings with $p<0.001$ and post-hoc Tukey tests comparing Group B and Group C also resulted in highly significant findings with $p<0.001$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 26. PFIQ-7 (Pelvic Floor Impact Questionnaire): ANOVA

This table details the ANOVA analysis of the PFIQ-7 data collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). In the ANOVA analyzing Index PFIQ-7, the Time x Group interaction produced significant findings of $F=3.49$, $p<0.05$ (DF=2, 142). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. When Group A was compared for PFD-related QoL between Time 1 versus Time 3, no significant findings were noted. However, when Group B was compared from Time 1 to Time 3, significant findings with $p<0.05$ were determined (with its mean significantly decreasing over time). As expected, Group C, the control group, was not significantly different between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had yet been implemented. However, following the interventions, when the pairs of groups were compared at Time 3, significant differences were detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, both Tukey tests for Group A versus Group C, as well as, Group B versus Group C, noted significant with $p<0.05$ (with the means of Groups A and B being significantly lower than the mean of Group C).

Table 26a. UIQ (Bladder Dysfunction QoL Domain from PFIQ-7): ANOVA

This table details the ANOVA analysis of the Index UIQ collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The UIQ index was

analyzed using ANOVA and post-hoc Tukey testing when significant findings were produced. The Time x Group interaction produced significant findings of $F=3.15$, $p<0.05$ ($DF=2, 142$). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. When Group A was compared for PFD-related QoL between Time 1 versus Time 3, no significant findings were noted. Non-significant findings were produced when Group B was compared from Time 1 to Time 3, and again when Group C, was compared between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had yet been implemented. However, following the interventions, when the pairs of groups were compared at Time 3, a significant difference was detected. Post-hoc Tukey testing comparing Group A and Group B noted no significant difference between this pair of study groups; however, Tukey testing for Group A versus Group C, noted significant findings with $p<0.05$ (with the mean of Group A being significantly lower than the mean of Group C). Group B versus Group C did not produce significant results.

Table 26b. CRAIQ (Colorectal Dysfunction QoL Domain from PFIQ-7): ANOVA

This table details the ANOVA analysis of the Index CRAIQ (bowel dysfunction domain of the PFIQ-7) collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The Index CRAIQ was analyzed using ANOVA with the Time x Group interaction producing significant findings of $F=3.36$, $p<0.05$ ($DF=2, 142$). Post-hoc Tukey tests were completed to compare each group at Time 1 to Time 3. When

Group A was compared for PFD-related QoL between Time 1 versus Time 3, no significant findings were noted. Non-significant findings were produced when Group B was compared from Time 1 to Time 3, and again when Group C, was compared between Time 1 and Time 3.

The pairs of groups were also compared at Time 1 and then again at Time 3. As expected, there were no significant differences between any pairs of groups (Group A versus Group B, Group A versus Group C, or Group B versus Group C) at Time 1 as no intervention had yet been implemented. However, following the interventions, when the pairs of groups were compared at Time 3, significant difference was detected when Group A was compared to Group C, $p<0.05$. (with the mean of Group A being significantly lower than the mean of Group C). Post-hoc Tukey testing comparing Group A and Group B, and comparison of Group B to Group C noted no significant differences.

Table 26c. POPIQ (POP QoL Domain from PFIQ-7): ANOVA

This table details the ANOVA analysis of the Index POPIQ collected at Time 1 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The third of the three PFIQ-7 domains, was analyzed using ANOVA. The Time x Group interaction produced non-significant findings, and, as such, no post-hoc Tukey tests were indicated.

Table 27. PFM Total=Knowledge + Importance + Commitment: ANOVA

This table details the ANOVA analysis of the Index PFMtotal, collected at Time 1, Time 2 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). Responses to the second, third and fourth non-validated items included on all three

surveys, were combined to create an index that was tested using ANOVA, with post-hoc Tukey test for significant findings. Item 2 asked participants, “Do you know what pelvic floor muscle exercises (also known as “Kegels”) are?” and offered three responses of ‘Yes’, ‘No’ and ‘I think so’. Item 2 responses were used to determine participants’ ‘knowledge’ levels related to PFM exercise. Item 3 was used to assess the participants’ ‘commitment’ toward PFM exercise by asking “Do you do pelvic floor muscle exercises (“Kegels”)?” followed by the five options of ‘Regularly’, ‘Often’, ‘Sometimes’, ‘Rarely’ and ‘Never’. Item 4 was used to evaluate the level of ‘importance’ that participants’ place on PFM exercise by asking, “Do you think doing pelvic floor exercise (“Kegels”) regularly is important for your health?” and offered five responses of “Very important”, “Moderately important”, “Somewhat important”, “Not important” and “Never thought about it”. Each of these three indices was analyzed separately as well as combined into the Index ‘PFMtotal’.

The ANOVA results of the Time x Group interaction showed highly significant differences with $F=22.78$ ($p<0.001$). Each of the three groups was then compared using Tukey tests to determine where the significant differences occurred. When Group A was compared at Time 1 and Time 2, highly significant differences were noted with $p<0.001$. These same highly significant differences were seen when Group A was compared from Time 1 to Time 3 and Time 2 to Time 3, with $p<0.001$ for both comparisons. The mean of Group A continued to show significant increase over time.

The same Tukey tests were completed for Group B and the highly significant $p<0.001$ findings were noted for comparisons of Time 1 and Time 2, and also for Time 1 versus Time 3 (with the means significantly increasing between Times 1 and 2 and Times

1 and 3). However, when Group B was compared from Time 2 to Time 3, while significant differences were still noted, the p-value was not as high ($p<0.01$).

As expected, when Group C, the control group, was compared from Time 1 to Time 2, Time 1 versus Time 3, and again at Time 2 and Time 3, no significant differences were noted.

Tukey post-hoc tests were also used to compare each group throughout the different times. As expected, at Time 1 (before any interaction had taken place), testing of Group A versus Group B, Group A versus Group C, and, Group B versus Group C, all resulted in no significant differences noted.

At Time 2, comparison between the groups detected highly significant differences. While Group A versus Group B at Time 2 showed no significant difference, Group A versus Group C, and, Group B versus Group C, both resulted in highly significant differences between each set of pairs, with $p<0.001$ (with the means of Groups A and B being significantly higher than the mean of Group C).

At Time 3 the same highly significant differences were noted between the groups with Group A and Group B showing no significant difference but Group A versus Group C, and, Group B versus Group C both having p-values of $p<0.001$ (with the means of Groups A and B being significantly higher than the mean of Group C).

Table 27a. PFM Exercise Knowledge: ANOVA

This table details the ANOVA analysis of the non-validated item 2 data collected at Time 1, Time 2 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The non-validated item 2 assessed the 'knowledge' level of participants with regard to PFM exercise. This index was analyzed using ANOVA testing to compare the

three groups over Time 1, Time 2 and Time 3. The ANOVA results of the Time x Group interaction showed significant differences with $F=3.60$ ($p<0.01$).

Each of the three groups was compared using Tukey tests to determine where the significant differences occurred. When Group A was compared at Time 1 and Time 2, significant differences were noted with $p<0.05$. Significant differences were again noted when Group A was compared from Time 1 to Time 3, with $p<0.01$ (as the mean of Group A was significantly increased from Time 1 to Time 2, and from Time 1 to Time 3); however, no significant differences were noted when comparing Group A at Time 2 to Time 3.

The same Tukey tests were completed for Group B and the highly significant $p<0.001$ findings were noted for comparisons of Time 1 and Time 2, and also for Time 1 versus Time 3 (as the means of Group B significantly increased from Time 1 to Time 2, and from Time 1 to Time 3). However, when Group B was compared from Time 2 to Time 3, no significant differences were detected.

As expected, when Group C, the control group, was compared from Time 1 to Time 2, Time 1 versus Time 3, and again at Time 2 and Time 3, no significant differences were noted.

Tukey post-hoc tests were also used to compare each group throughout the different times. As expected, at Time 1 (before any interaction had taken place), testing of Group A versus Group B, Group A versus Group C, and, Group B versus Group C, all resulted in no significant differences noted.

At Time 2, comparison between the groups detected a significant difference only when Group B was compared to Group C, with the mean of Group B being significantly

higher than the mean of Group C ($p<0.05$). Group A versus Group B at Time 2 showed no significant difference, as did Group A versus Group C.

At Time 3, no significant differences were noted between any of the groups' comparisons; Group A and Group B showing no significant difference, Group A versus Group C showing no significant difference, and finally, Group B versus Group C also producing non-significant p-values.

Table 27b. PFM Exercise Commitment: ANOVA

This table details the ANOVA analysis of the non-validated item 3 data collected at Time 1, Time 2 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The non-validated item 3 assessed the 'commitment' level of participants with regard to PFM exercise. This index was analyzed using ANOVA testing to compare the three groups over Time 1, Time 2 and Time 3. The ANOVA results of the Time x Group interaction showed highly significant differences with $F=19.94$ ($p<0.001$).

Each of the three groups was compared using Tukey tests to determine where the significant differences occurred. When Group A was compared at Time 1 and Time 2, no significant differences were noted. However, highly significant differences were noted with $p<0.001$, when Group A was compared from Time 1 to Time 3, and again, when Time 2 was compared to Time 3, with $p<0.001$ for both comparisons (with the mean of Group A being significantly higher from Time 1 to Time 3, and from Time 2 to Time 3).

The same Tukey tests were completed for Group B while no significance was noted between Time 1 and Time 2, the highly significant $p<0.001$ findings were noted for comparisons of Time 1 versus Time 3, and again, when Group B was compared from

Time 2 to Time 3, $p<0.01$ (with the mean of Group B being significantly higher from Time 1 to Time 3, and from Time 2 to Time 3).

As expected, when Group C, the control group, was compared from Time 1 to Time 2, Time 1 versus Time 3, and again at Time 2 and Time 3, no significant differences were noted.

Tukey post-hoc tests were also used to compare each group throughout the different times. As expected, at Time 1 (before any interaction had taken place), testing of Group A versus Group B, Group A versus Group C, and, Group B versus Group C, all resulted in no significant differences noted.

At Time 2, comparison between the groups detected no significant differences. Group A versus Group B at Time 2 showed no significant difference, Group A versus Group C, and, Group B versus Group C, also resulted in no significant differences between each set of pairs.

At Time 3, some highly significant differences were noted between the groups. While comparison of Group A and Group B found no significant difference, comparison of Group A versus Group C, and, Group B versus Group C both noted highly significant difference with p-values of $p<0.001$ (with the means of Groups A and B being significantly higher than the mean of Group C).

Table 27c. PFM Exercise Importance: ANOVA

This table details the ANOVA analysis of the non-validated item 4 data collected at Time 1, Time 2 and Time 3 from Group A (n=48), Group B (n=48) and Group C (n=49). The non-validated item 4 assessed the 'importance' participants placed on PFM exercise in overall health. This index was analyzed using ANOVA testing to compare the

three groups over Time 1, Time 2 and Time 3. The ANOVA results of the Time x Group interaction showed highly significant differences with $F=30.68$ ($p<0.001$).

Each of the three groups was compared using Tukey tests to determine where the significant differences occurred. When Group A was compared at Time 1 and Time 2, highly significant differences were noted with $p<0.001$. This was again noted when Group A was compared from Time 1 to Time 3 ($p<0.001$). The mean of Group A was significantly increased from Time 1 to Time 2, and from Time 1 to Time 3. However, when Time 2 was compared to Time 3, no significant differences were noted.

The same Tukey tests were completed for Group B while highly significant p-values were noted between Time 1 and Time 2 ($p<0.001$), and again for Time 1 versus Time 3 ($p<0.001$), when Group B was compared from Time 2 to Time 3 no significant differences were noted. The mean of Group B was significantly higher at Time 2 compared to Time 1, and at Time 3 compared to Time 1.

As expected, when Group C, the control group, was compared from Time 1 to Time 2, Time 1 versus Time 3, and again at Time 2 and Time 3, no significant differences were noted.

Tukey post-hoc tests were also used to compare each group throughout the different times. As expected, at Time 1 (before any interaction had taken place), testing of Group A versus Group B, Group A versus Group C, and, Group B versus Group C, all resulted in no significant differences noted.

At Time 2, comparison between the groups detected some highly significant differences. While Group A versus Group B at Time 2 showed no significant difference, Group A versus Group C, and, Group B versus Group C, resulted in highly significant

differences between each set of pairs, with $p<0.001$ for both comparisons (with the means of Groups A and B being significantly higher than the mean of Group C).

At Time 3, some highly significant differences were noted between the groups. While comparison of Group A and Group B found no significant difference, comparison of Group A versus Group C, and, Group B versus Group C both noted highly significant difference with p-values of $p<0.001$ (with the means of Groups A and B being significantly higherer than the mean of Group C).

Table 28. Seeking Information Effect on Group C PIKQ

This table details the Descriptive Analysis of the non-validated item 5 data collected at Time 1, Time 2 and Time 3 from Group C (n=49). Eight participants from Group C noted that they had sought information regarding pelvic floor health and, therefore, scores for the 24 PIKQ items were needed to determine if this had had an effect. Scores for the 24 PIKQ items were totalled and averaged to be used for determination of what, if any, differences appeared in the scores of the eight information-seekers compared to the 41 Group C members that selected "No" when asked if they had sought pelvic floor health information.

For all 49 participants in Group C, the PIKQ score dropped from an average of 43.37 to 41.67 from Time 1 to Time 2 (Difference=-1.70 from Time 1 to Time 2), but then increased to 48.72 at Time 3 (Difference=+5.35 from Time 1 to Time 3). When reviewing the data for the 41 of 49 participants reporting no information-seeking behaviours, the score was 42.48 at Time 1, dropped to 40.55 at Time 2 (Difference=-1.93 from Time 1 to Time 2), and then increased to 46.85 at Time 3 (Difference=+4.37 from Time 1 to Time 3). Of the eight participants that reported they had sought information,

the Time 1 baseline score was the highest, at 47.91, showed the less of a drop compared to the 'non-seekers' at Time 2 with a score of 47.40 (Difference=-0.51 from Time 1 to Time 2) and then showed a greater increase compared to the 'non-seekers' with a final score of 58.33 at Time 3 (Difference=10.42 from Time 1 to Time 3).

Table 29. ANOVA Summary

This table allows ease of reference to determine which variables showed the most highly significant differences following the research intervention.

For pelvic floor knowledge acquisition, the PIKQ, PIKQ-Incontinence and PIKQ-POP all resulted in highly significant p-values of $p<0.001$. For the PFD symptom related ANOVA tests, the PFDI-20, PFDI-20 Weighted, and the PFDI-20(+2) analysis all produced highly significant results with $p<0.001$.

When the PFDI-20 was analyzed by domains, Domain UDI (bladder dysfunction) and Domain POPDI (POP) both showed high significance with $p<0.001$, while its third domain, CRADI (bowel dysfunction) resulted in significant findings with a slightly higher p-value of $p<0.01$.

When the PFDI-20(+2) was analyzed according to its five PFD domains, domains Bladder Dysfunction, POP and Sexual Dysfunction all resulted in highly significant p-values of $p<0.001$, while domains Bowel Dysfunction and Pelvic Pain resulted in slightly higher p-values of $p<0.01$.

When the Domain Bladder Dysfunction was subdivided into three sub-categories, all three divisions (Bladder Obstruction, Urinary Frequency and Urinary Incontinence) produced highly significant p-values of $p<0.001$. For the sub-sub-categories of Urinary

Incontinence, Stress Urinary Incontinence showed significance with $p<0.05$, while Urgency Urinary Incontinence showed significance with $p<0.01$.

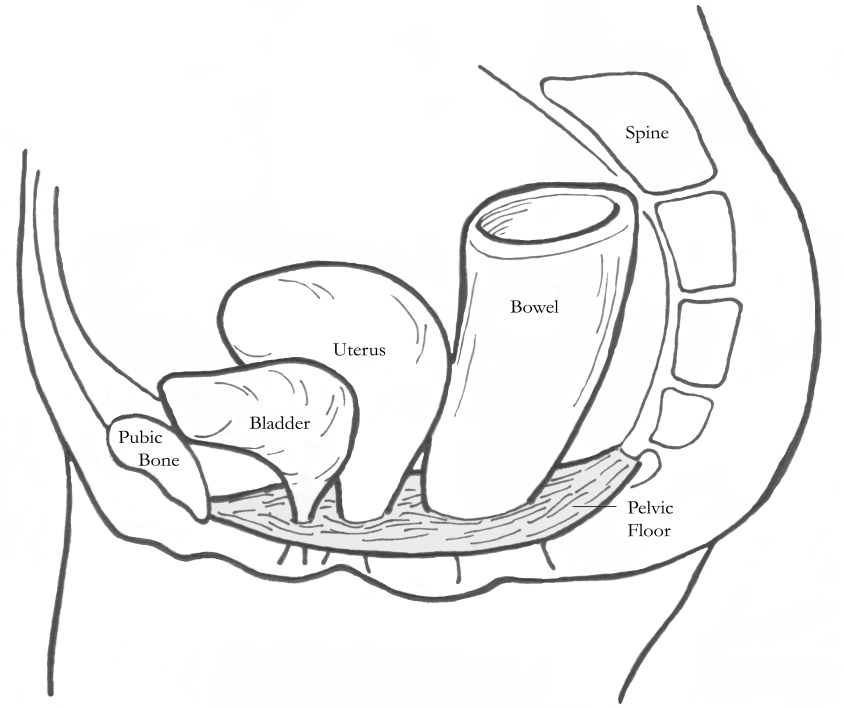
When the Domain Bowel Dysfunction was subdivided into three sub-categories, only two of the three produced significant results. Bowel Obstruction showed significance with $p<0.01$ and Bowel Urgency was significant with $p<0.05$. The sub-category Bowel Incontinence; however, did not show significant results, and neither did its sub-sub-categories; Flatual Incontinence and Fecal Incontinence.

When analyzing the findings related to QoL affected by PFD symptoms, the PFIQ-7 resulted in significant findings with $p<0.05$, as did two of its three domains. While Domain UIQ (QoL related to bladder symptoms) and CRAIQ (QoL related to bowel symptoms) produced p-values of $p<0.05$, Domain POPIQ (QoL related to POP) failed to show significant results.

With regard to the non-validated items, the Index 'PFMtotal' produced highly significant results with $p<0.001$, as did 'PFM Exercise Importance', and, 'PFM Exercise Commitment'. For the variable 'PFM Exercise Knowledge', the significant p-value was slightly higher at $p<0.01$.

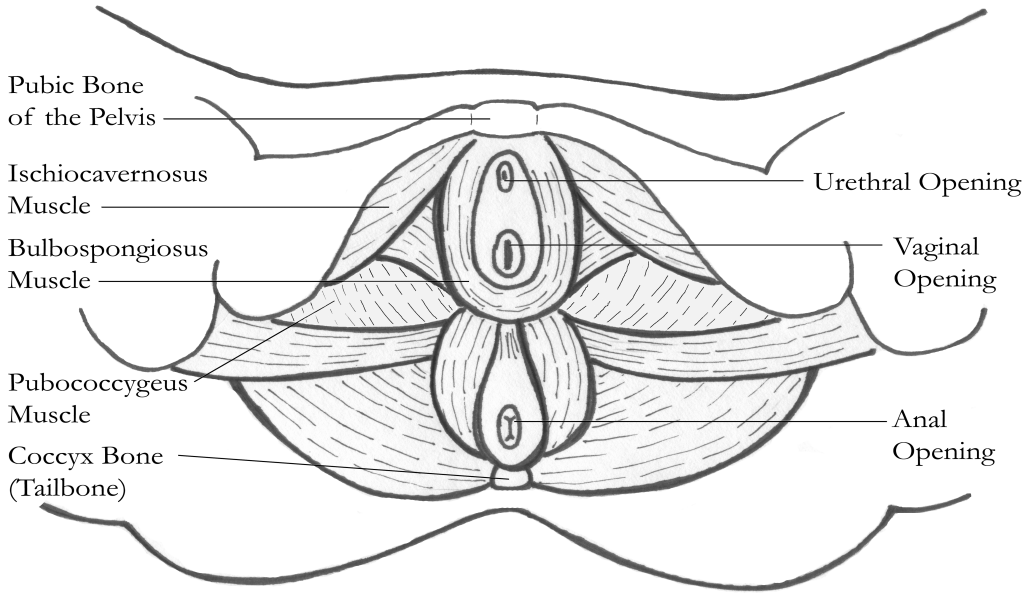
FIGURES

Figure 1. Female Pelvis



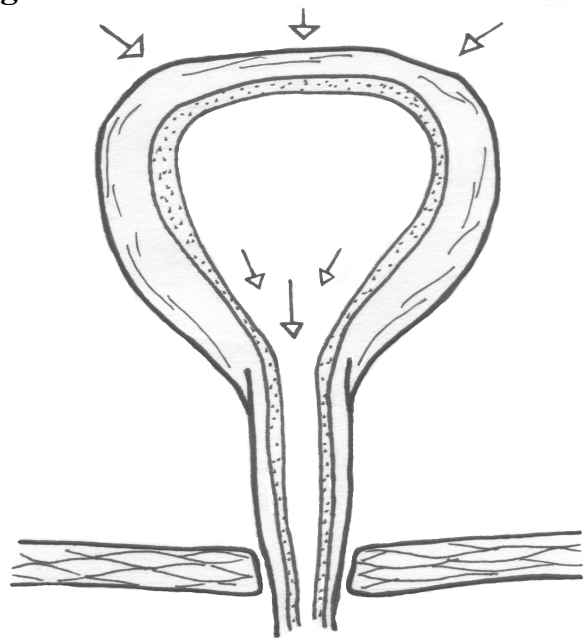
Source: *I Laughed So Hard I Peed My Pants! A Woman's Essential Guide for Improved Bladder Control* (148).

Figure 2. Anatomy of the PFM



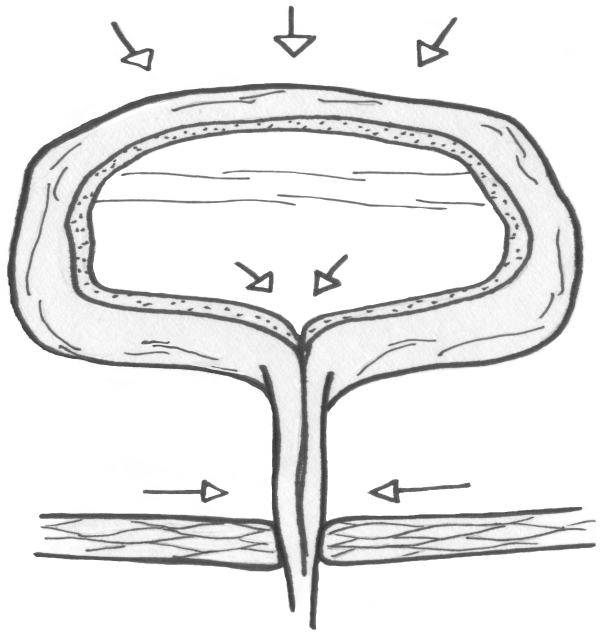
Source: *I Laughed So Hard I Peed My Pants! A Woman's Essential Guide for Improved Bladder Control* (148).

Figure 3a. Ineffective PFM Closure on Bladder Leads to Incontinence



Source: *I Laughed So Hard I Peed My Pants! A Woman's Essential Guide for Improved Bladder Control* (148).

Figure 3b. Effective PFM Closure on Bladder Promotes Continence



Source: *I Laughed So Hard I Peed My Pants! A Woman's Essential Guide for Improved Bladder Control* (148).

Figure 4a. High Water Level: Ropes Lax/Tension-Free

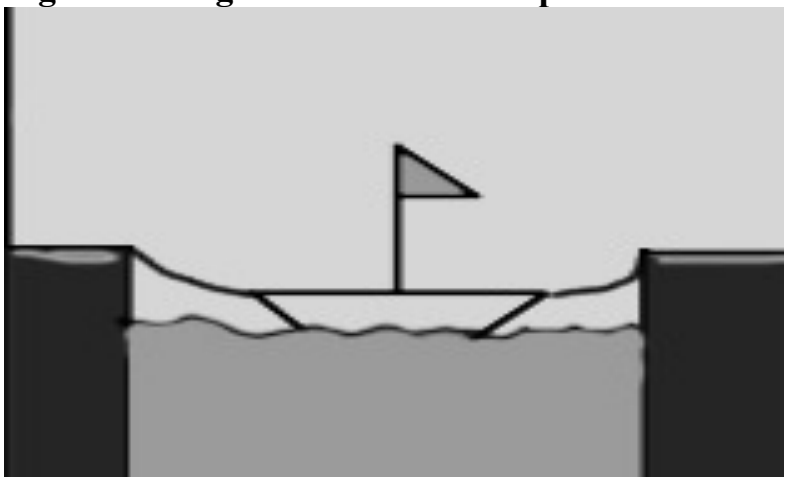


Figure 4b. Low Water Level: Ropes Taut/Under Tension

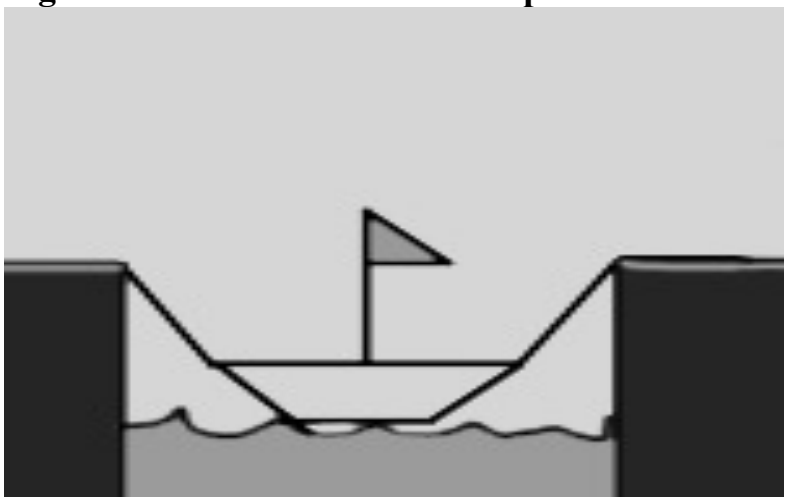


Figure 4c. Low Water Level Remains: Over Time Ropes Stretch/Fray

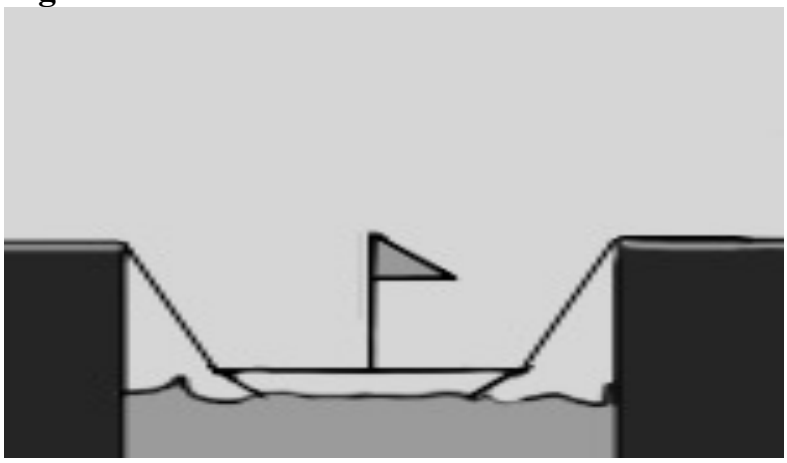


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Figure 5. PFD Symptoms Measured by PFDI-20(+2) Items

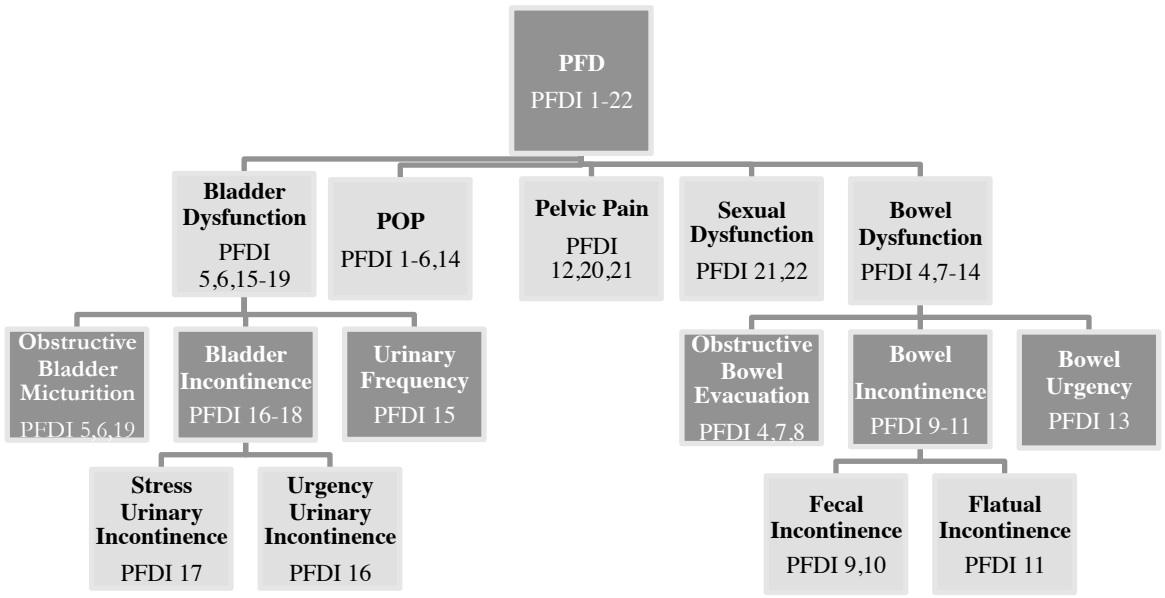


Figure 6. Age of Participants

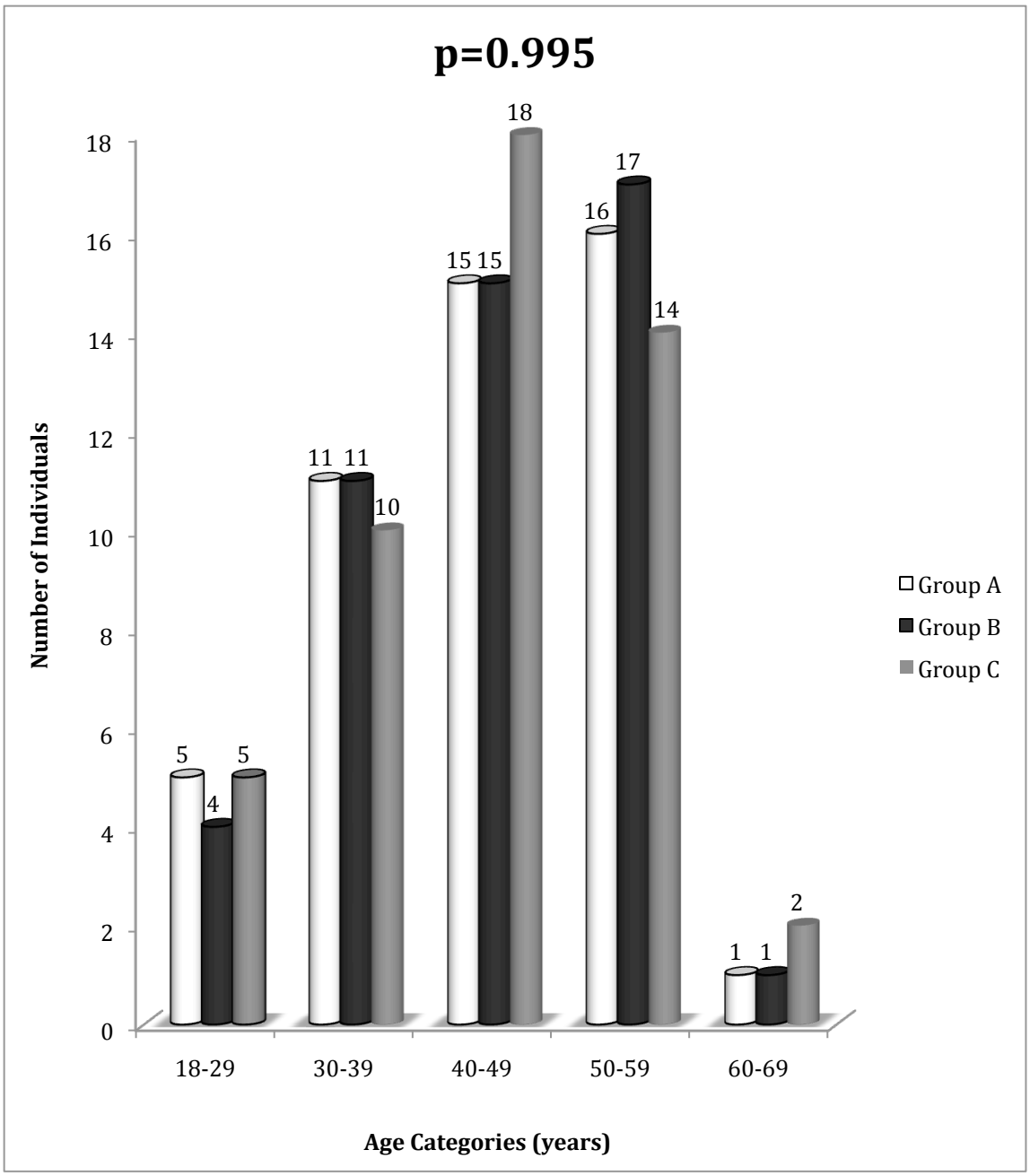


Figure 7. Highest Level of Education of Participants

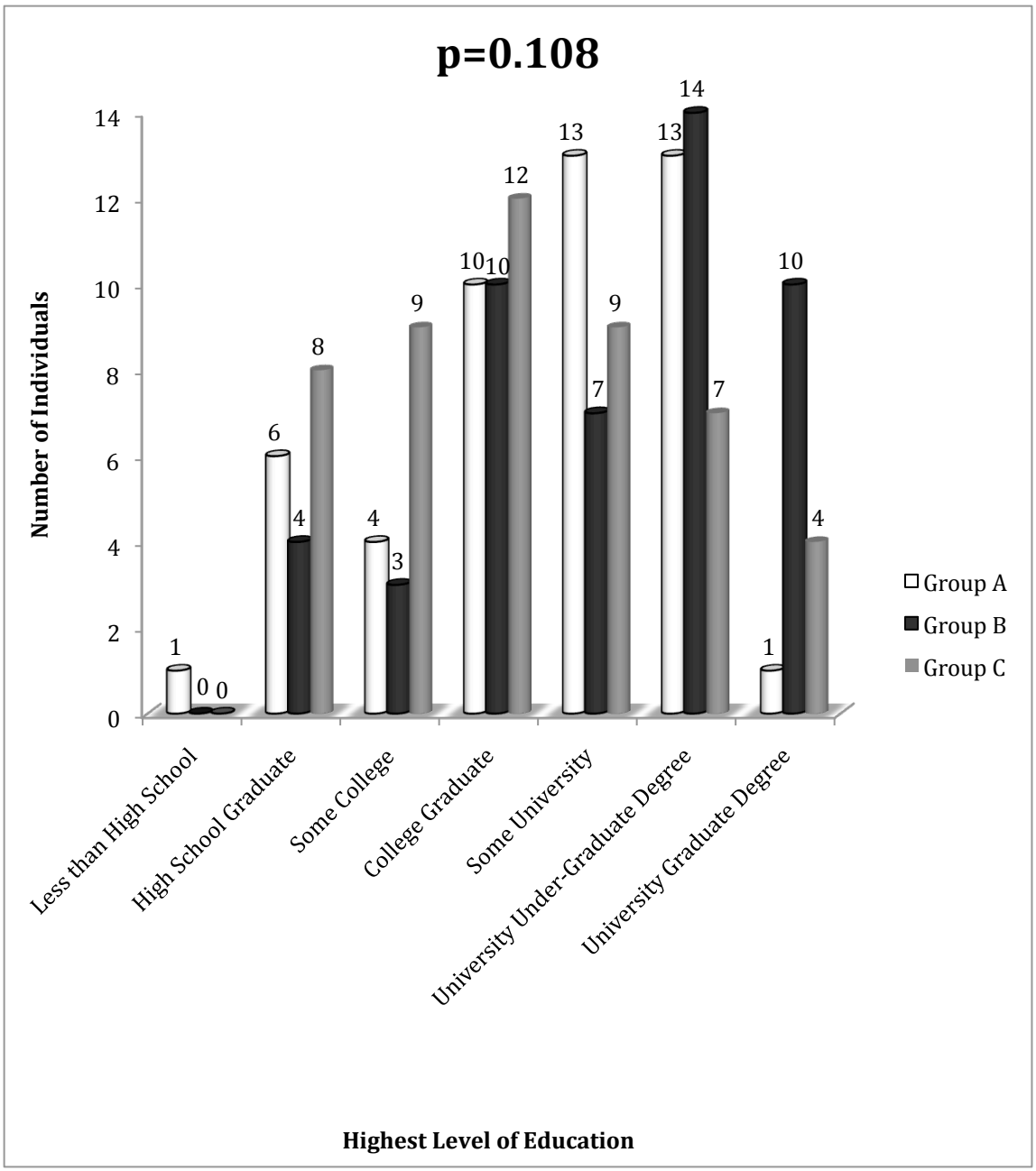


Figure 8. Marital Status of Participants

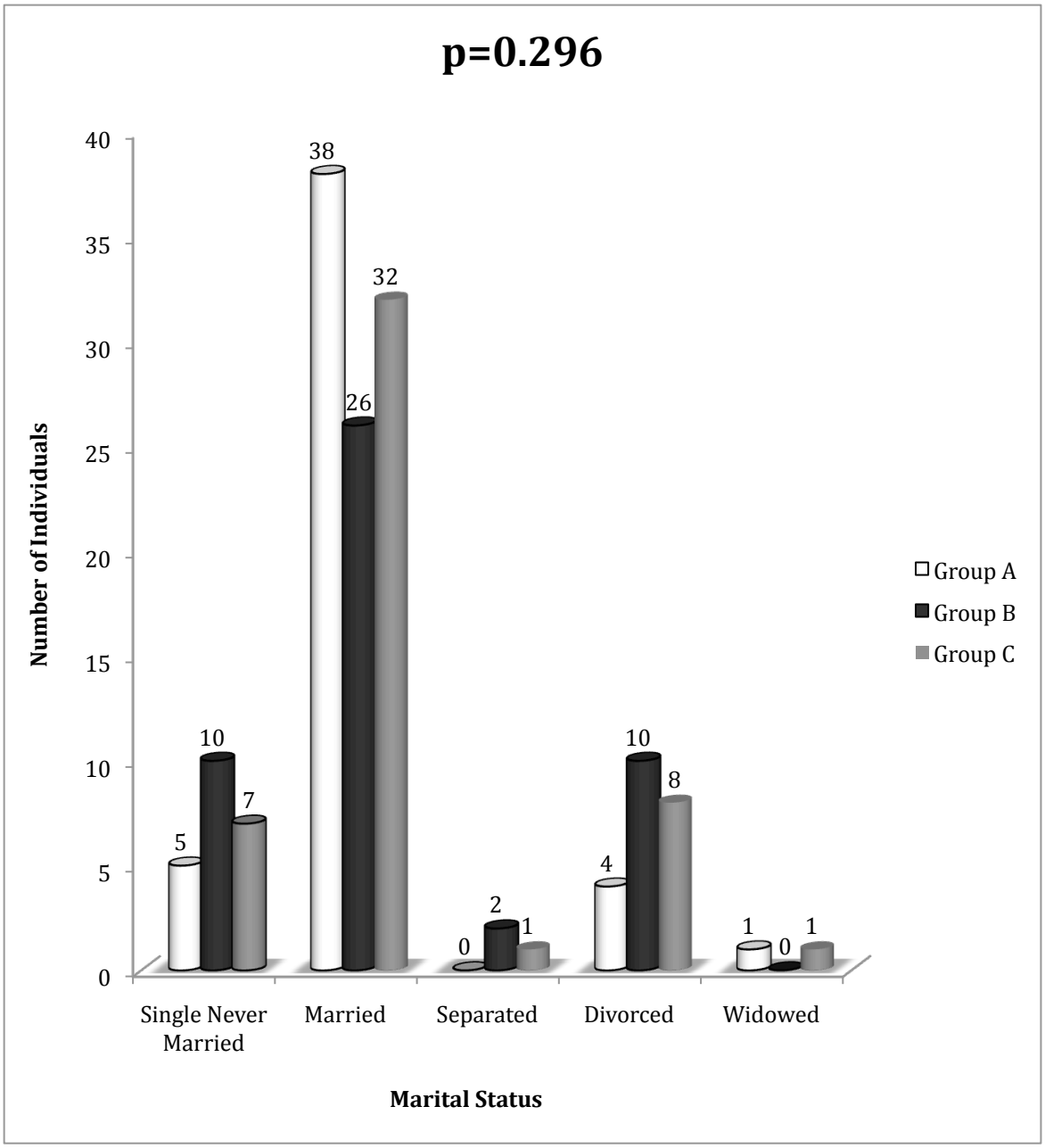


Figure 9. Annual Household Income of Participants

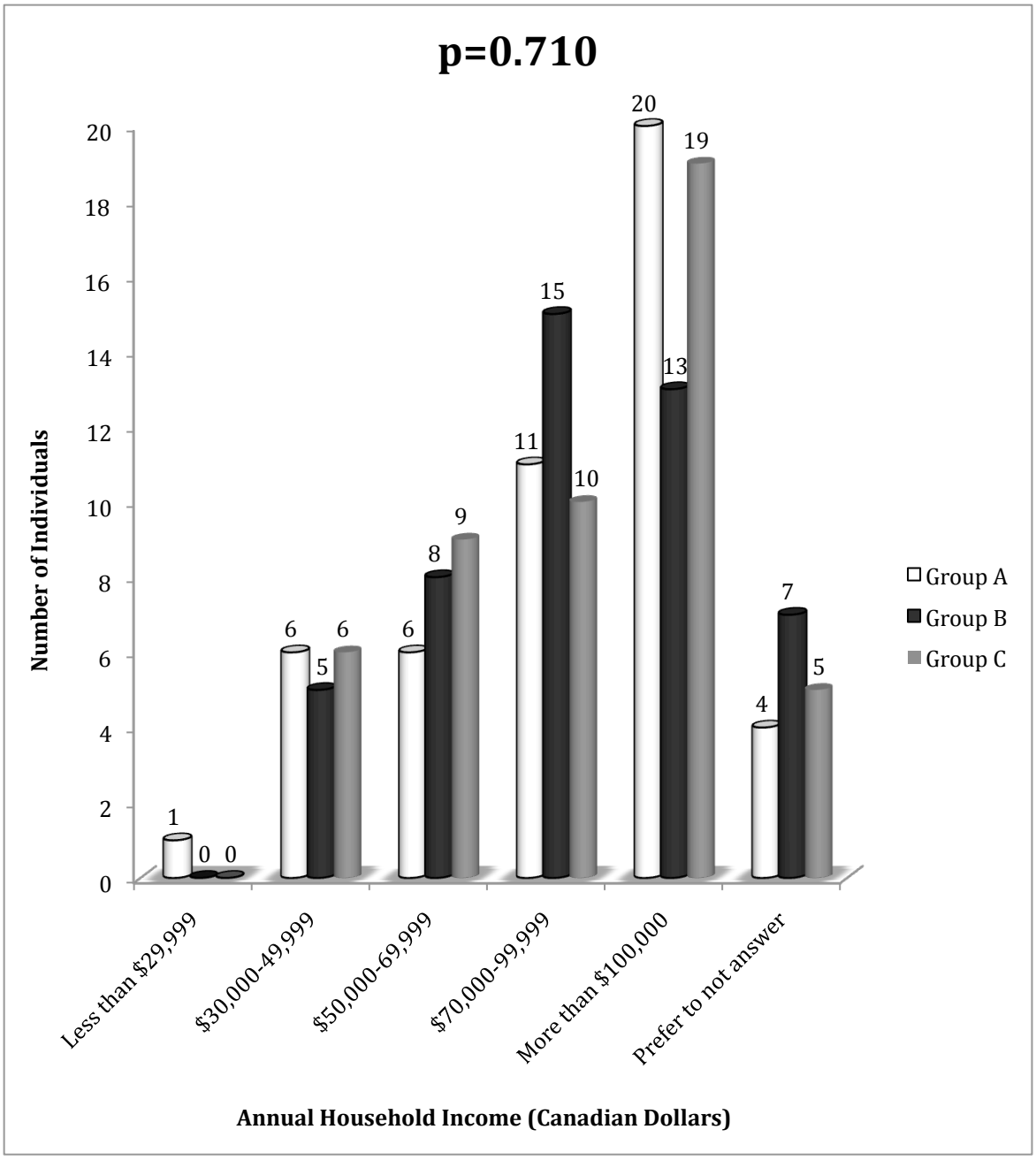


Figure 10. Race/Ethnicities of Participants

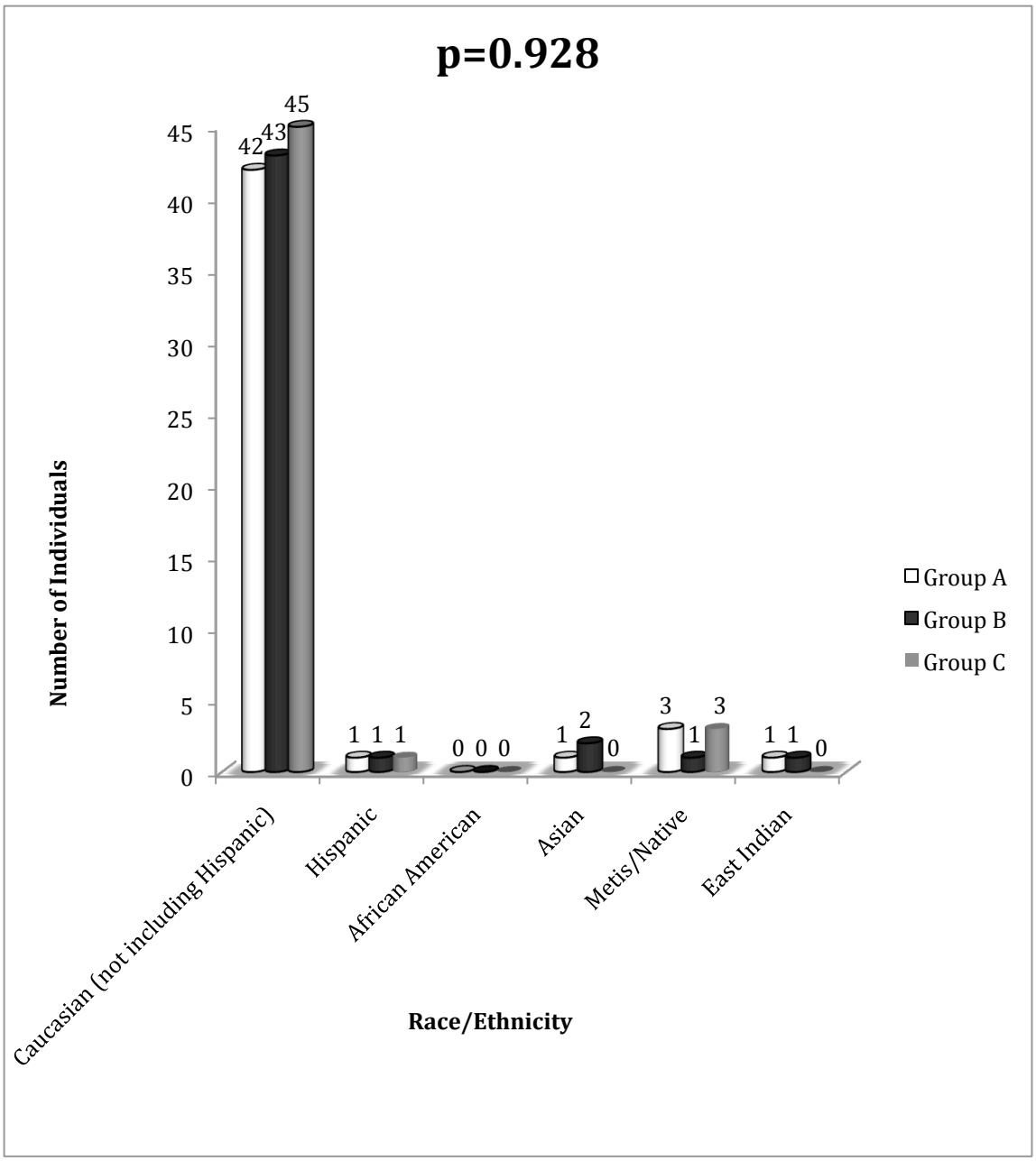


Figure 11. Overall Health Status of Participants

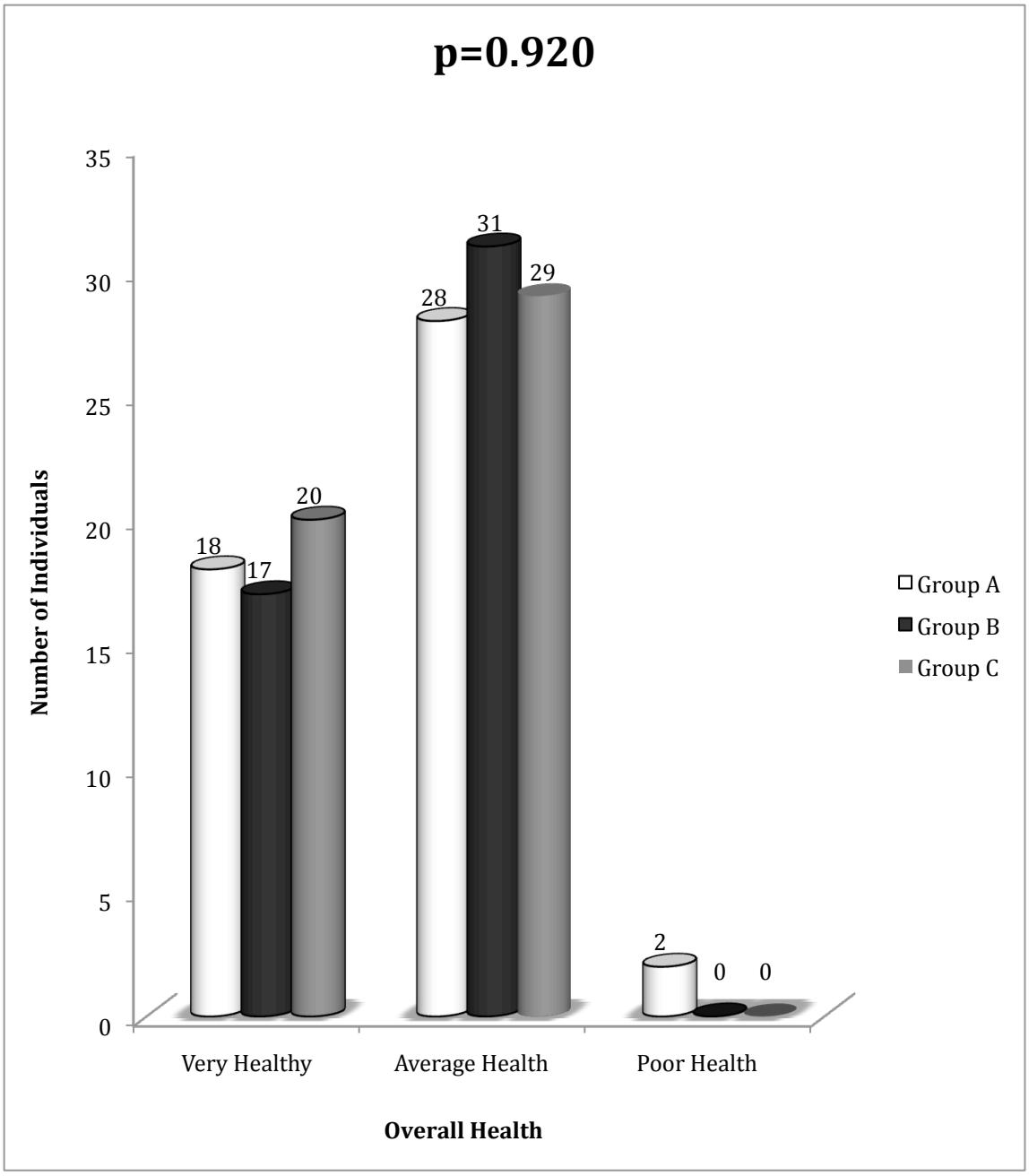


Figure 12. Number of Pregnancies of Participants

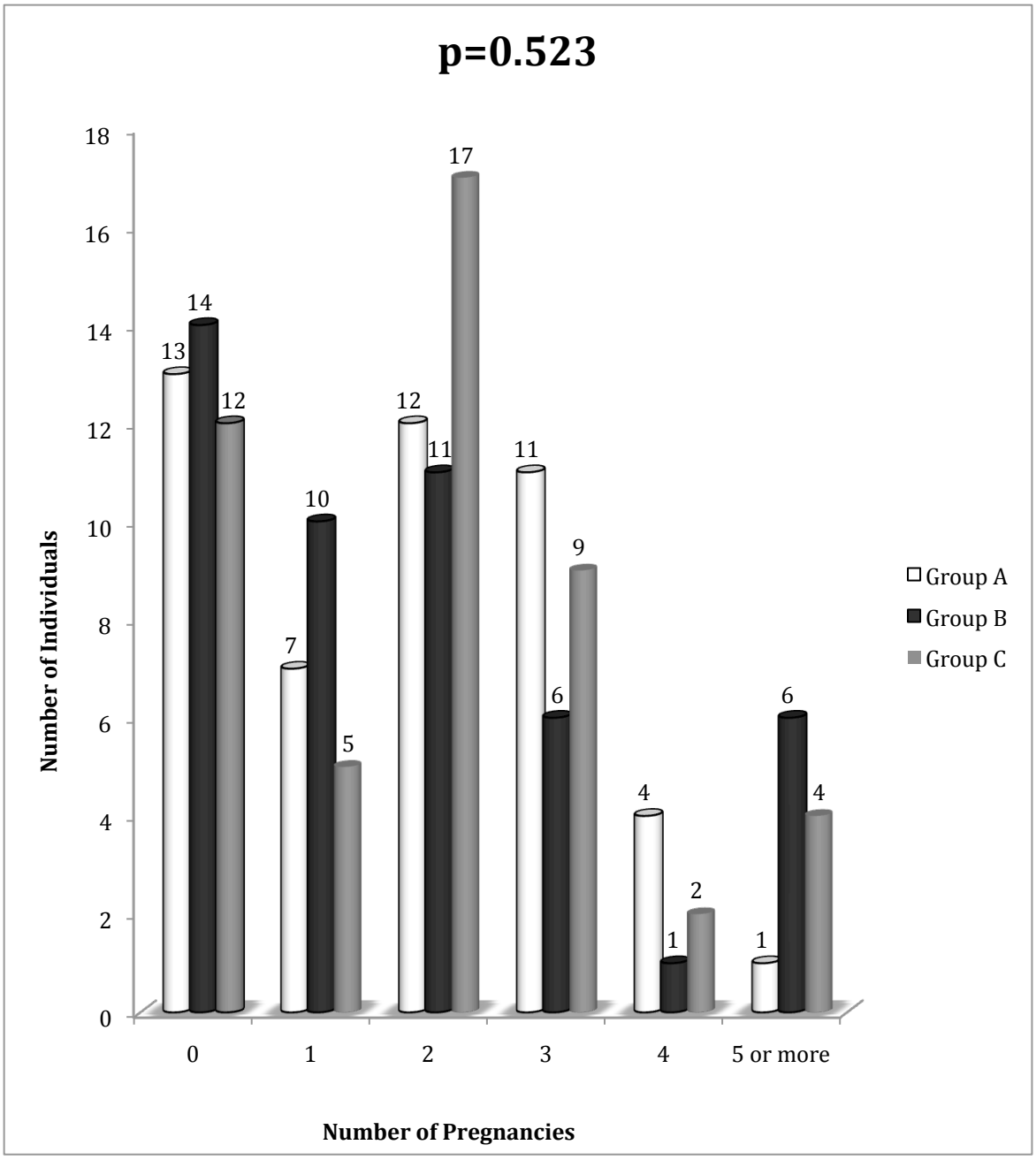


Figure 13. Number of Vaginal Deliveries of Participants

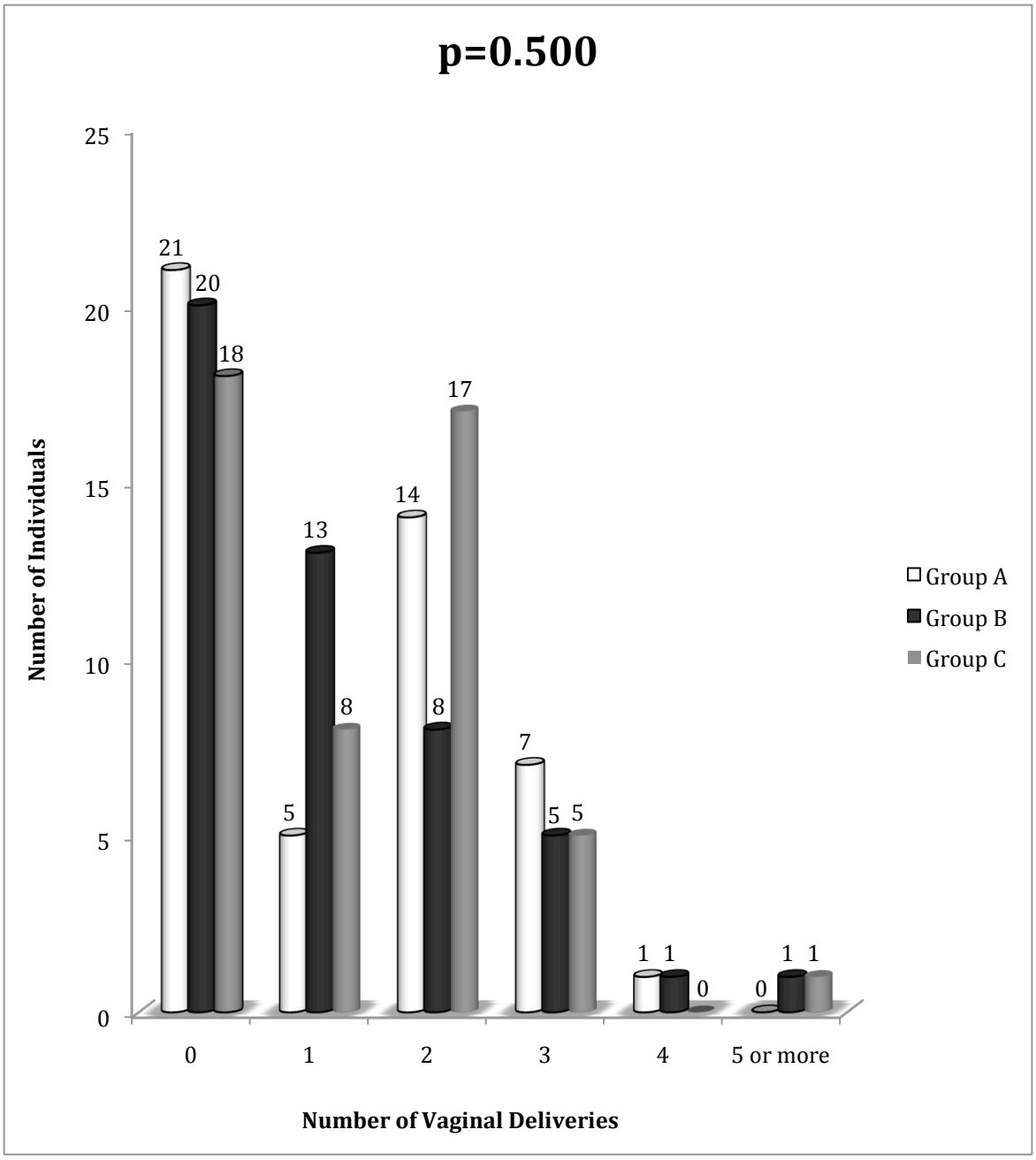


Figure 14. Number of Caesarean Sections of Participants

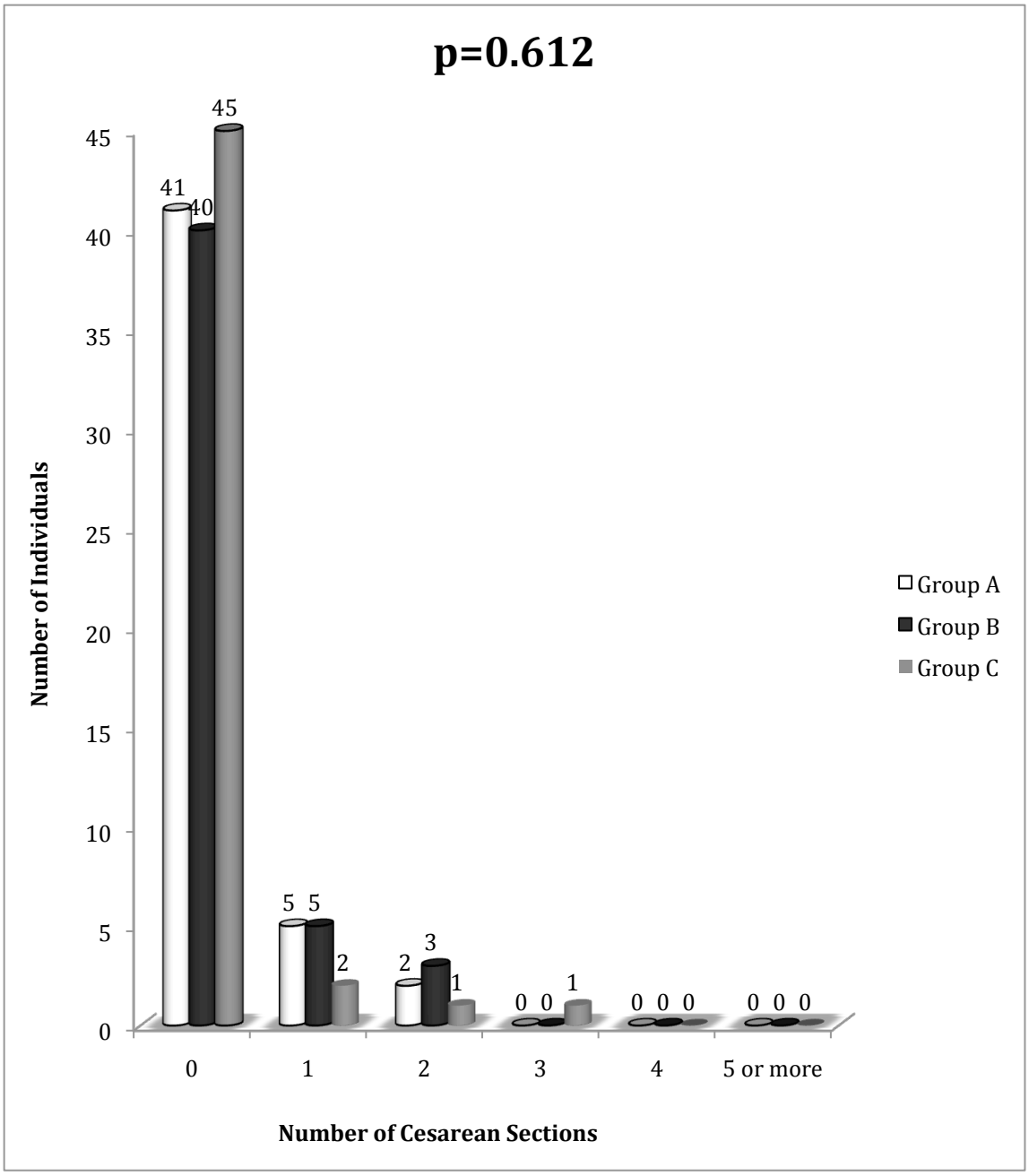


Figure 15. Birthing Interventions of Participants

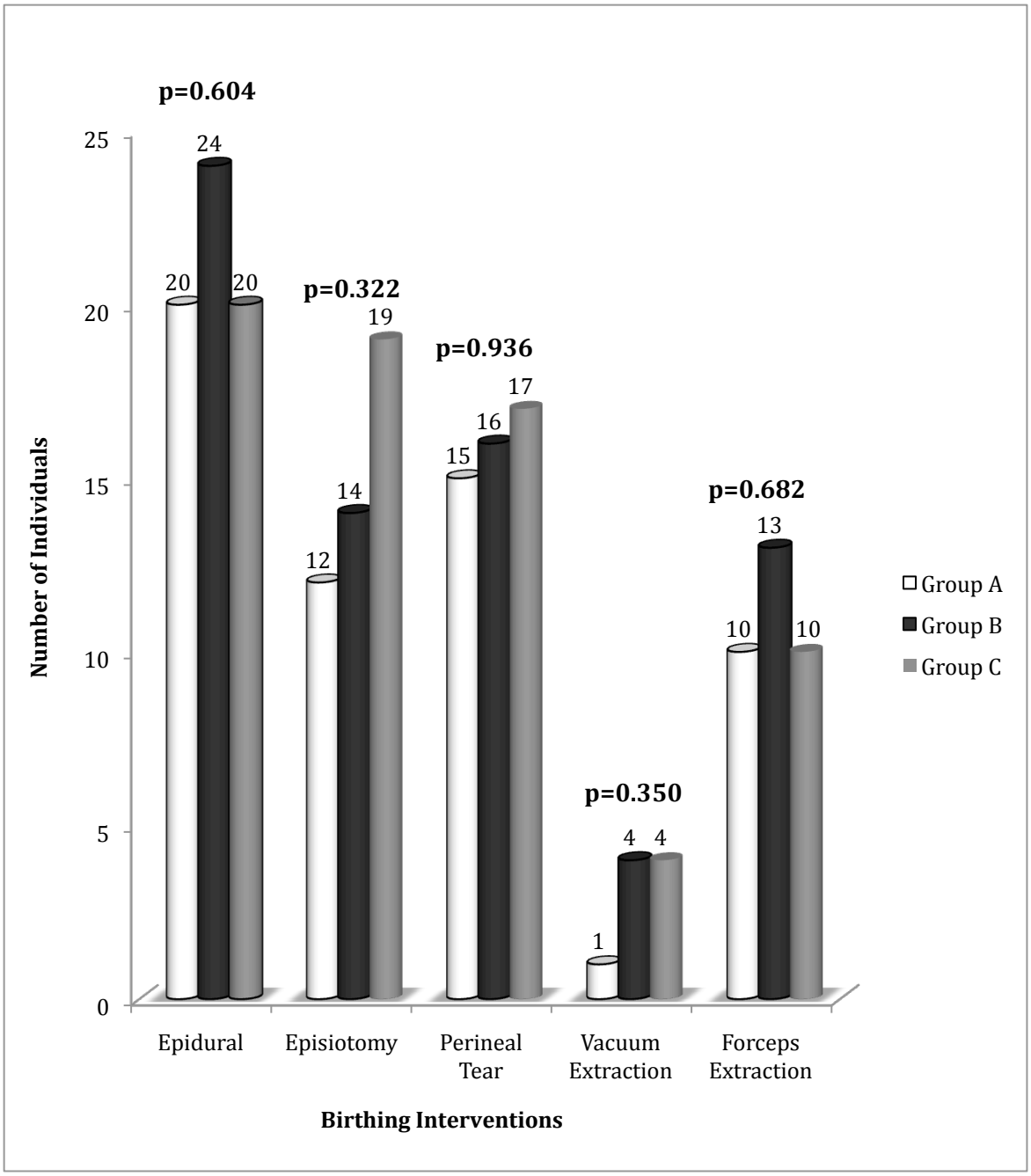


Figure 16. Total Birthing Interventions of Participants

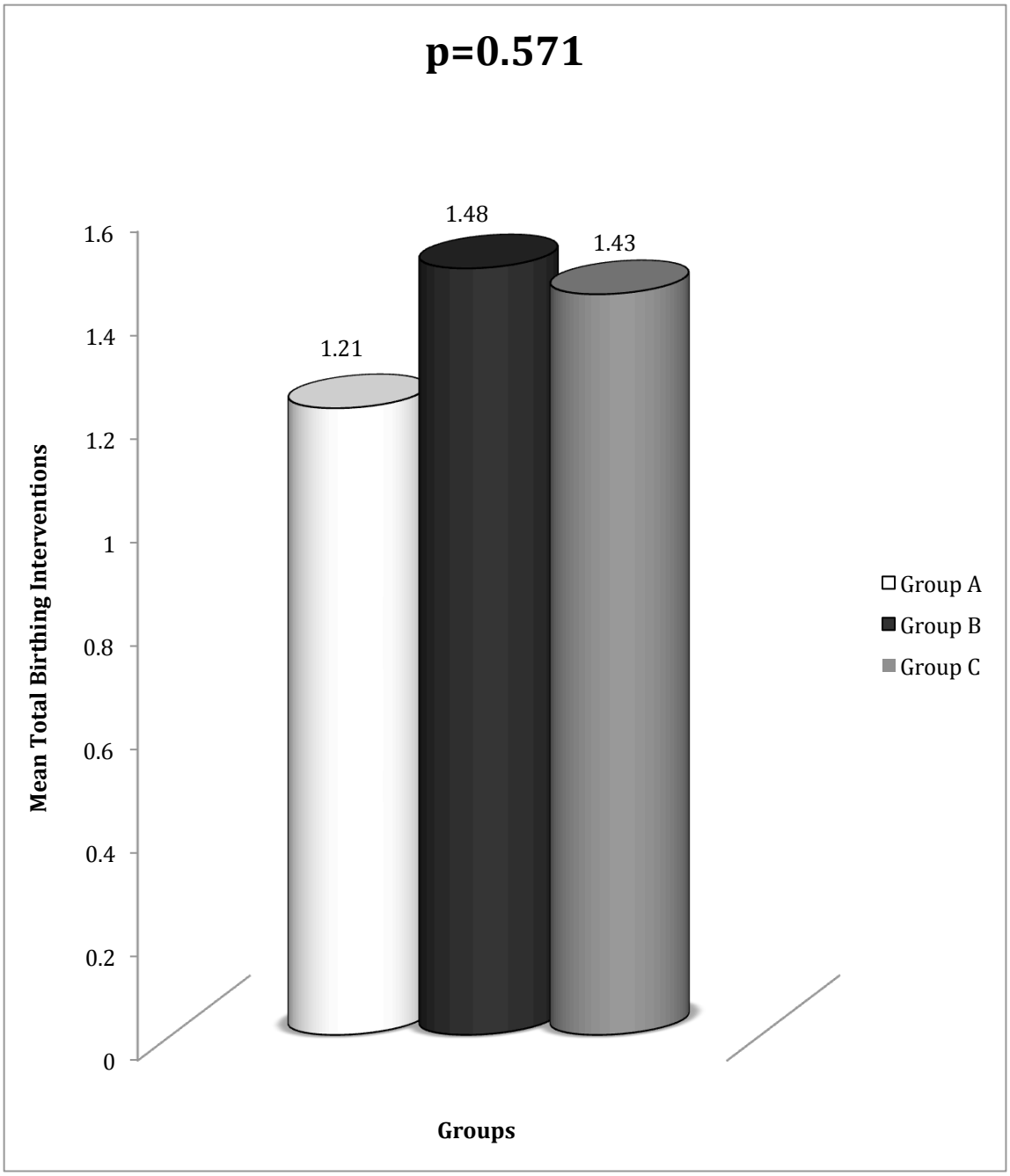


Figure 17. Menstrual Status of Participants

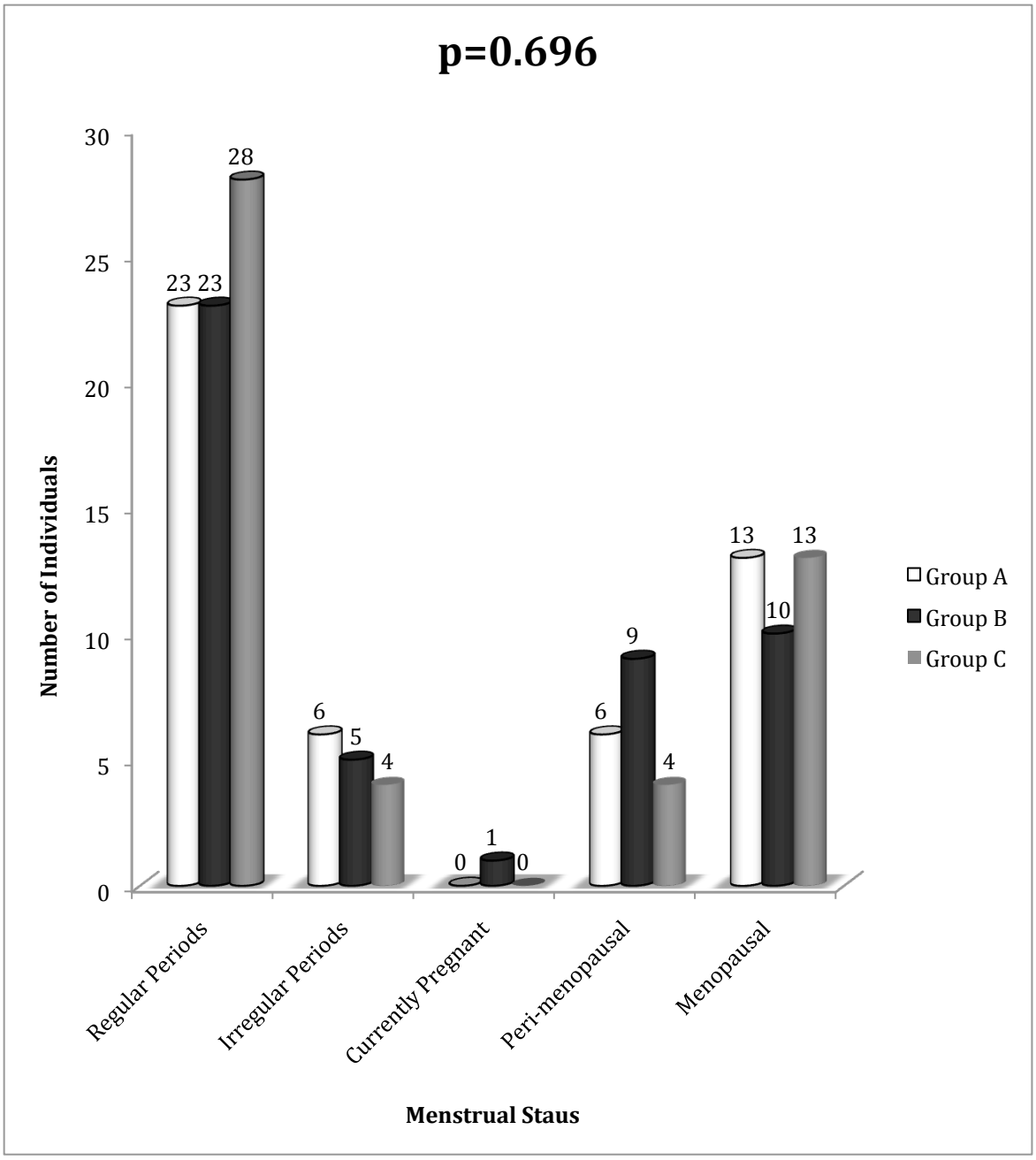
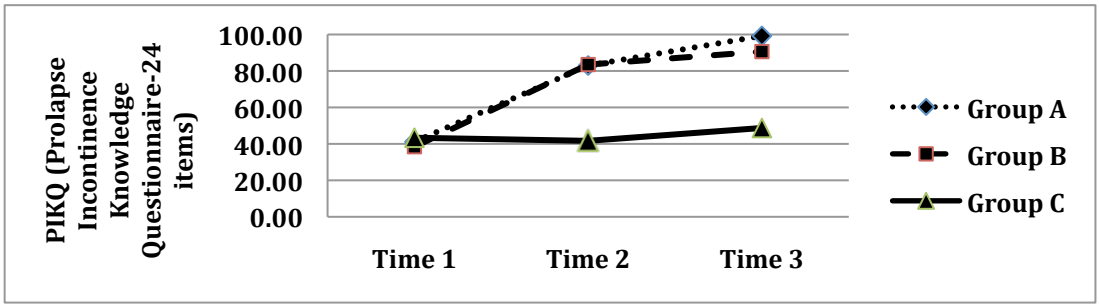
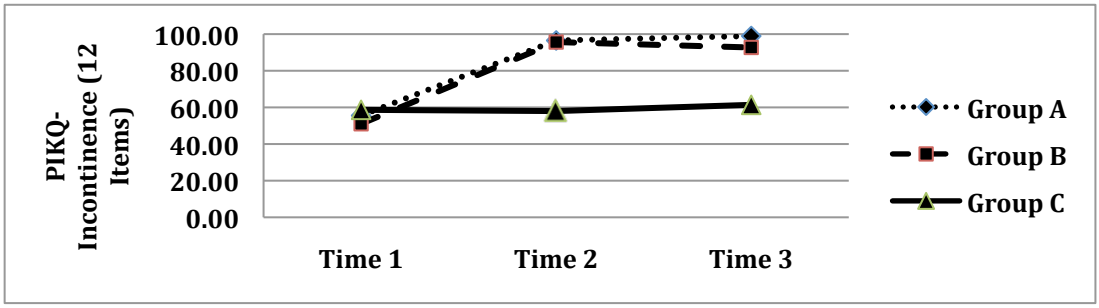


Figure 18. Results of PIKQ Indices Over Times 1, 2 and 3

Index PIKQ for Groups A, B and C Over Times 1, 2 and 3:



Index PIKQ-Incontinence for Groups A, B and C Over Times 1, 2 and 3:



Index PIKQ-POP for Groups A, B and C Over Times 1, 2 and 3:

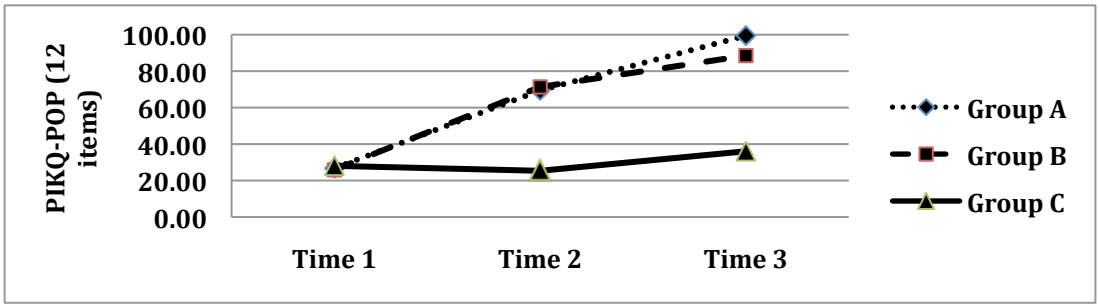
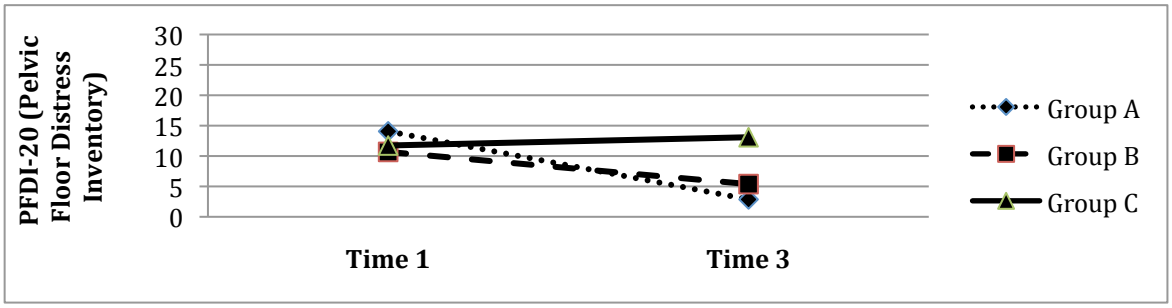
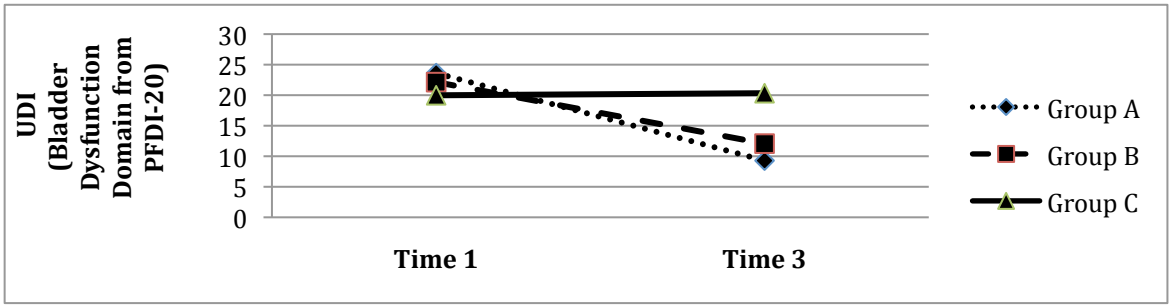


Figure 19. Results of PFDI-20 Indices Over Times 1 and 3

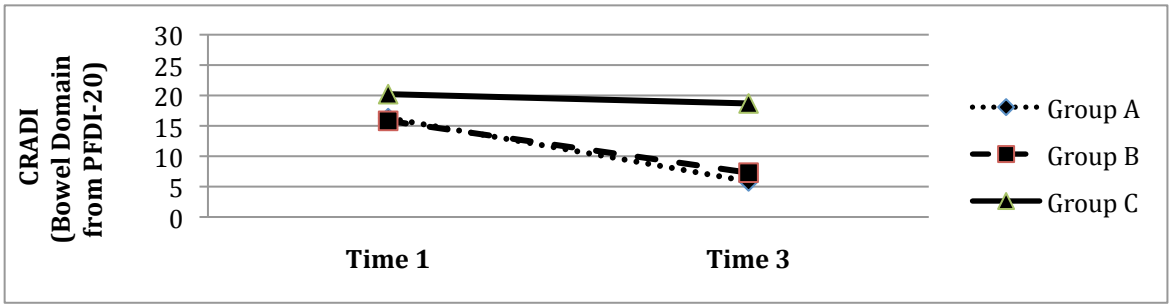
Index PFDI-20 for Groups A, B and C Over Times 1 and 3:



Index UDI (PFDI-20) for Groups A, B and C Over Times 1 and 3:



Index CRADI (PFDI-20) for Groups A, B and C Over Times 1 and 3:



Index POPDI (PFDI-20) for Groups A, B and C Over Times 1 and 3:

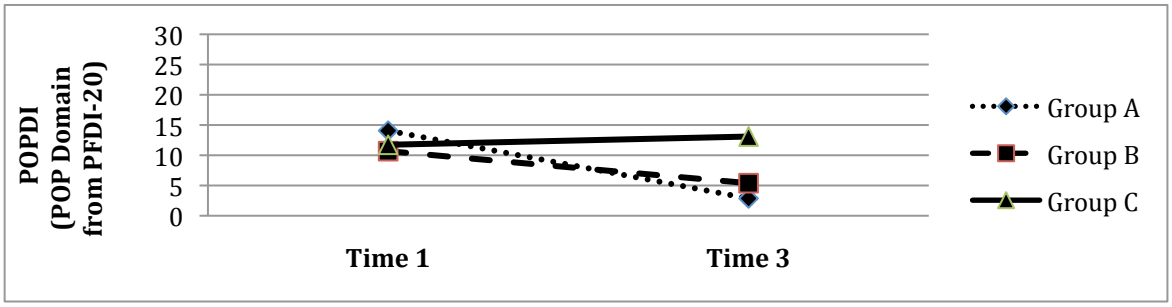
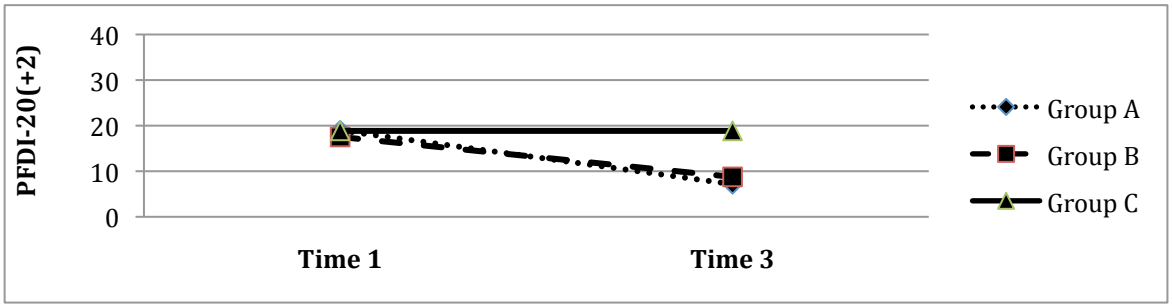
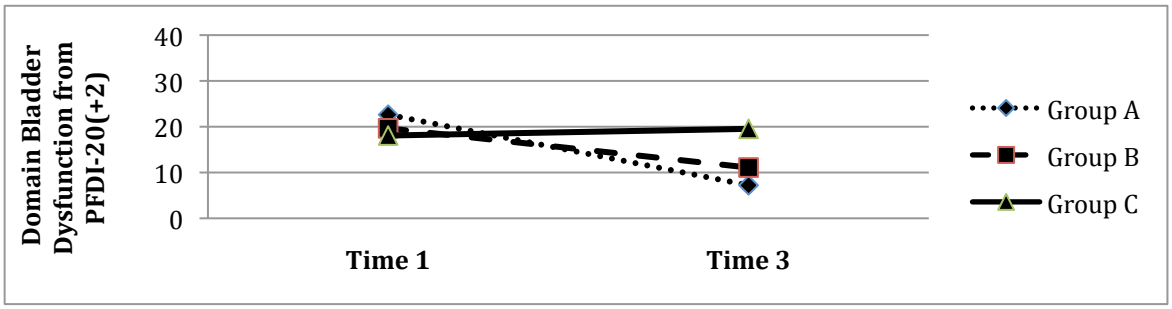


Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3

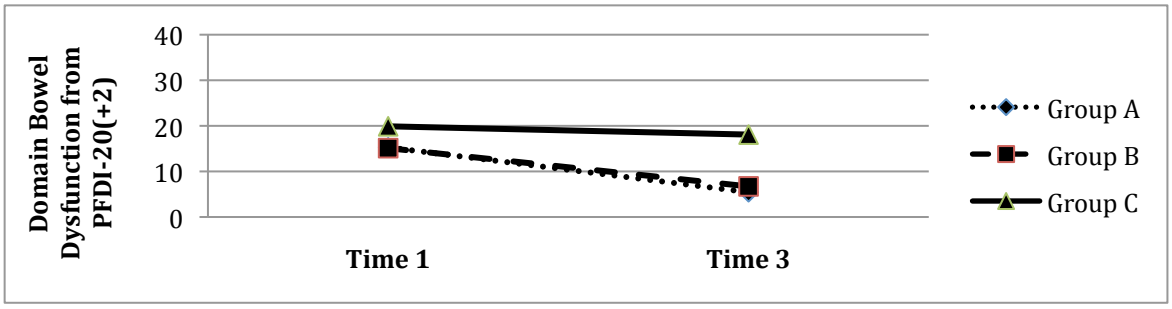
Index PFDI-20(+2) for Groups A, B and C Over Times 1 and 3:



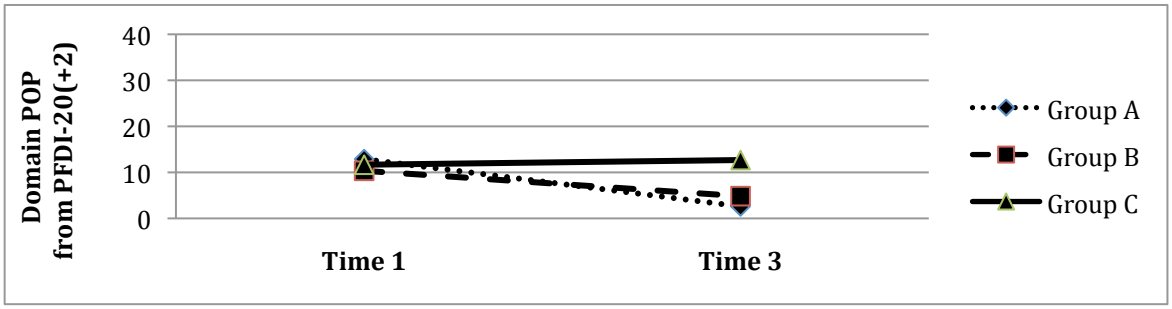
Index Bladder Dysfunction of PFDI-20(+2) for Groups A, B and C Over Times 1 and 3:



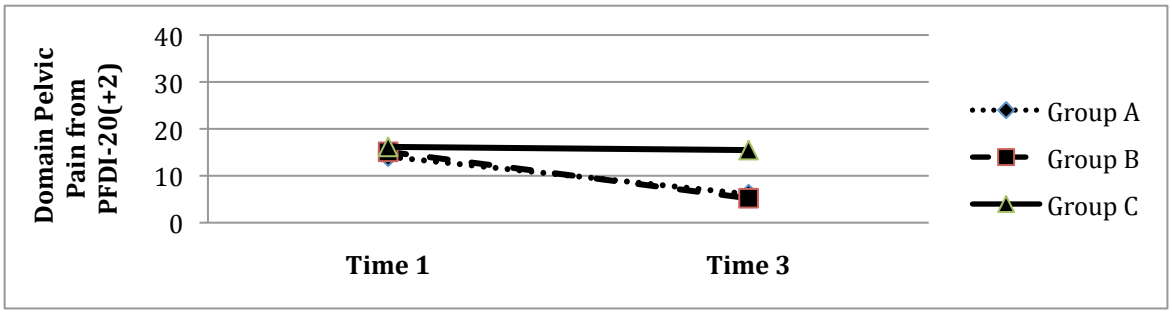
Index Bowel Dysfunction of PFDI-20(+2) for Groups A, B and C Over Times 1 and 3:



Index POP of PFDI-20(+2) for Groups A, B and C Over Times 1 and 3:



Index Pelvic Pain of PFDI-20(+2) for Groups A, B and C Over Times 1 and 3:



Index Sexual Dysfunction of PFDI-20(+2) for Groups A, B and C Over Times 1 and 3:

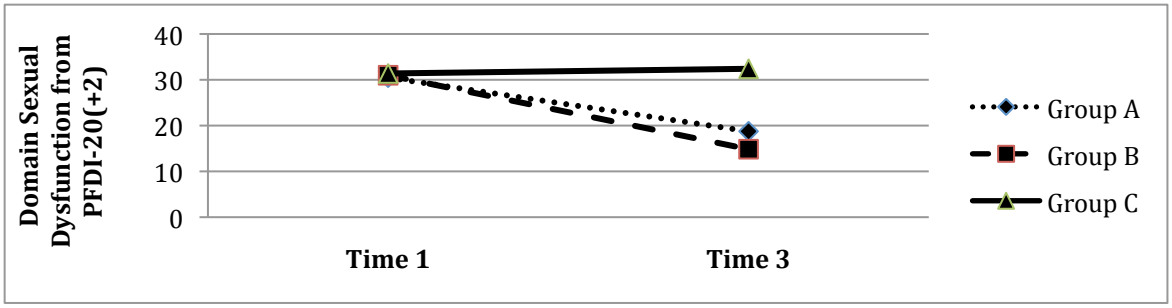
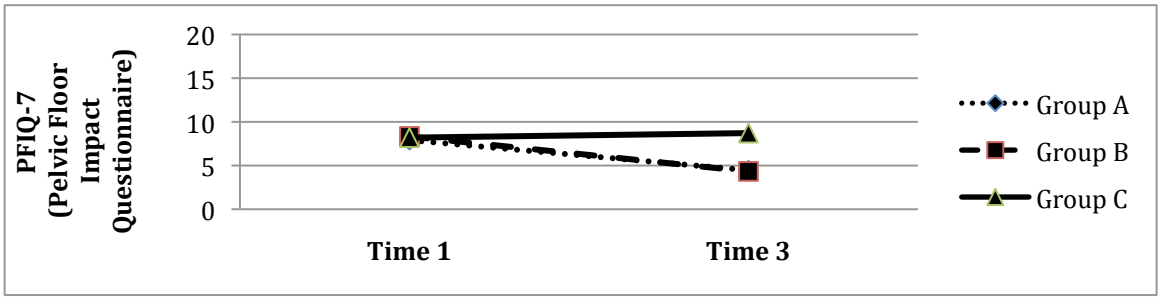
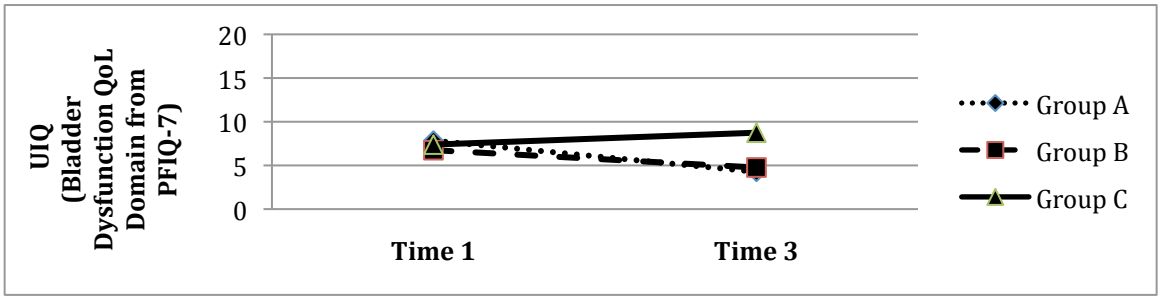


Figure 21. Results of PFIQ-7 Indices Over Times 1 and 3

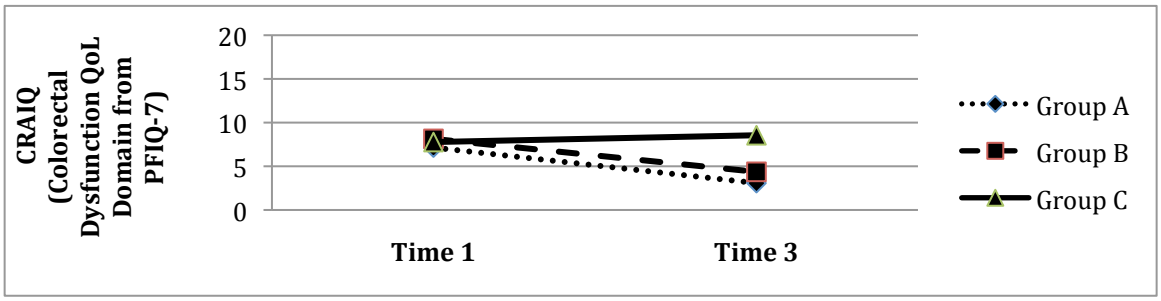
Index PFIQ-7 for Groups A, B and C Over Times 1 and 3:



Index UIQ (Bladder Dysfunction) of PFIQ-7 for Groups A, B and C Over Times 1 and 3:



Index CRAIQ (Bowel Dysfunction) of PFIQ-7 for Groups A, B and C Over Times 1 and 3:



Index POPIQ (POP) of PFIQ-7 for Groups A, B and C Over Times 1 and 3:

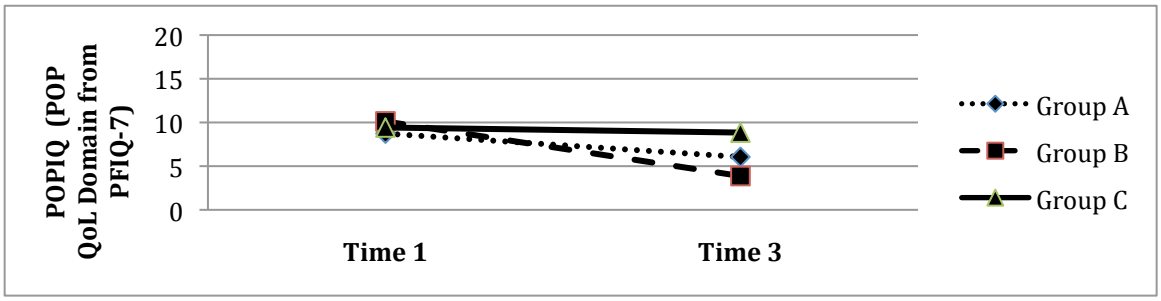


Figure 22a. Symptomatic PFD Domains: Compare 3 Groups at Time 1

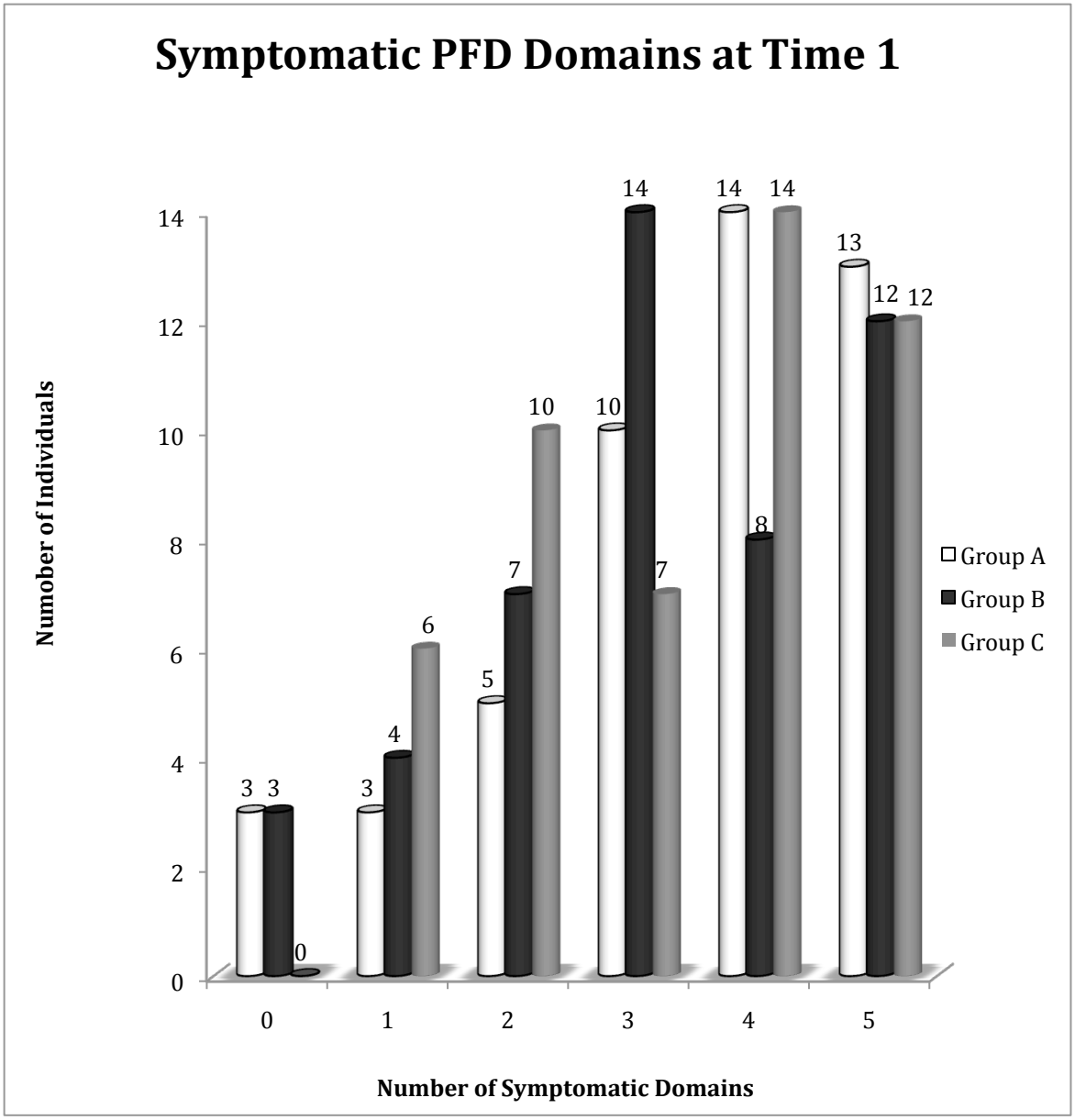


Figure 22b. Symptomatic PFD Domains: Compare 3 Groups at Time 3

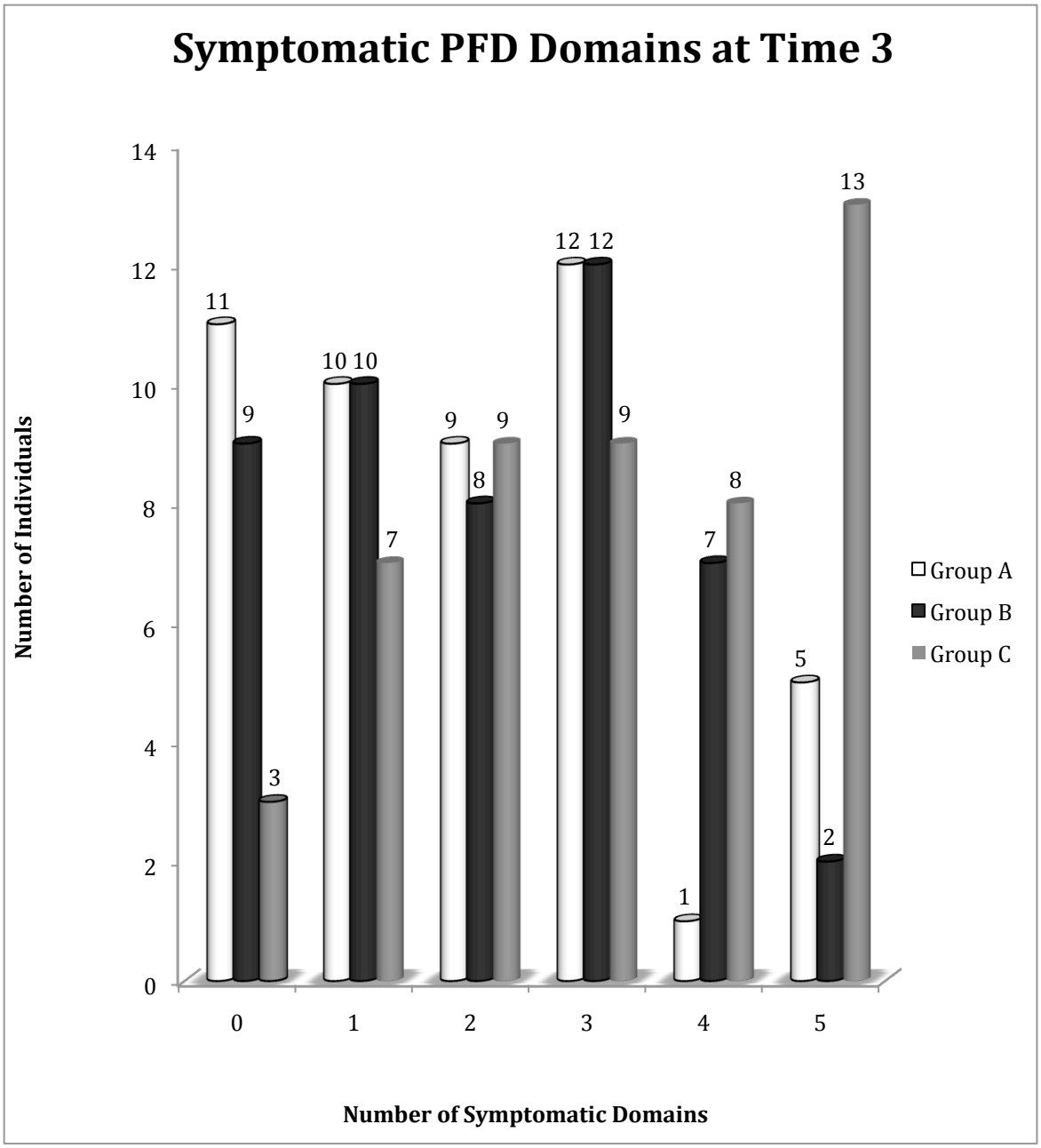


Figure 23a. Symptomatic PFD Domains of Group A at Time 1 and Time 3

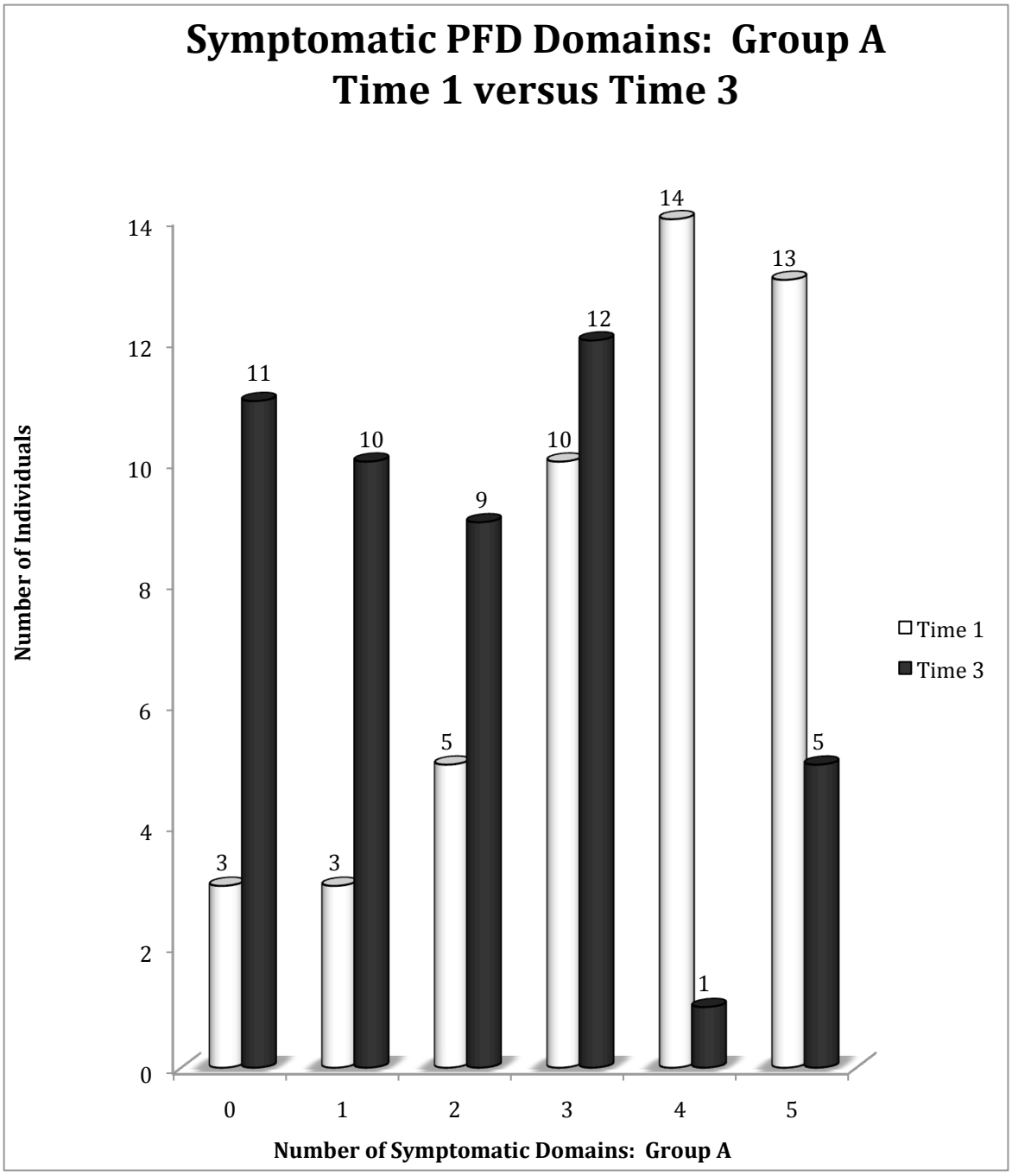


Figure 23b. Symptomatic PFD Domains of Group B at Time 1 and Time 3

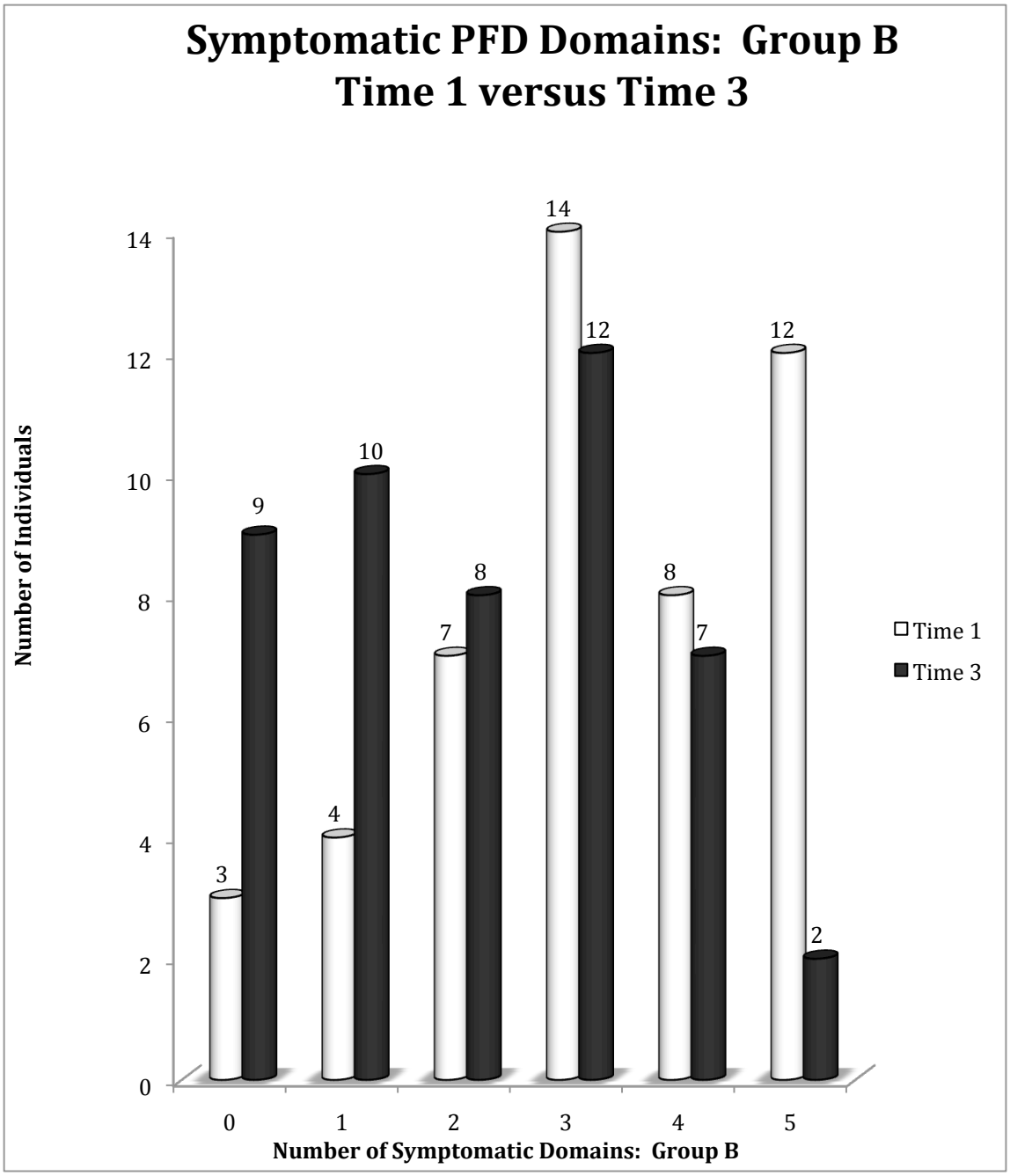


Figure 23c. Symptomatic PFD Domains of Group C at Time 1 and Time 3

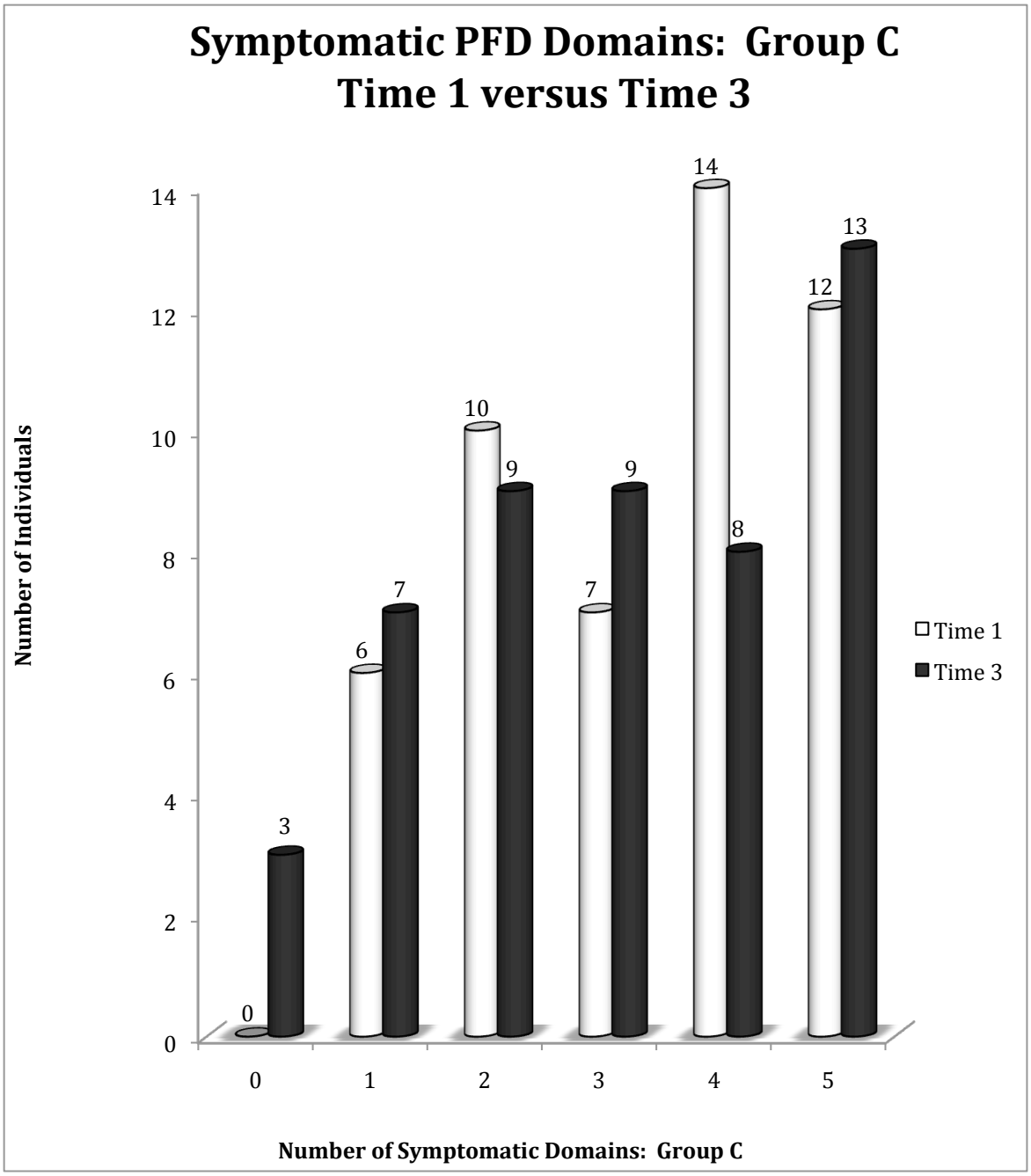


Figure 24a. Participants' Awareness to the Presence of PFD at Time 1

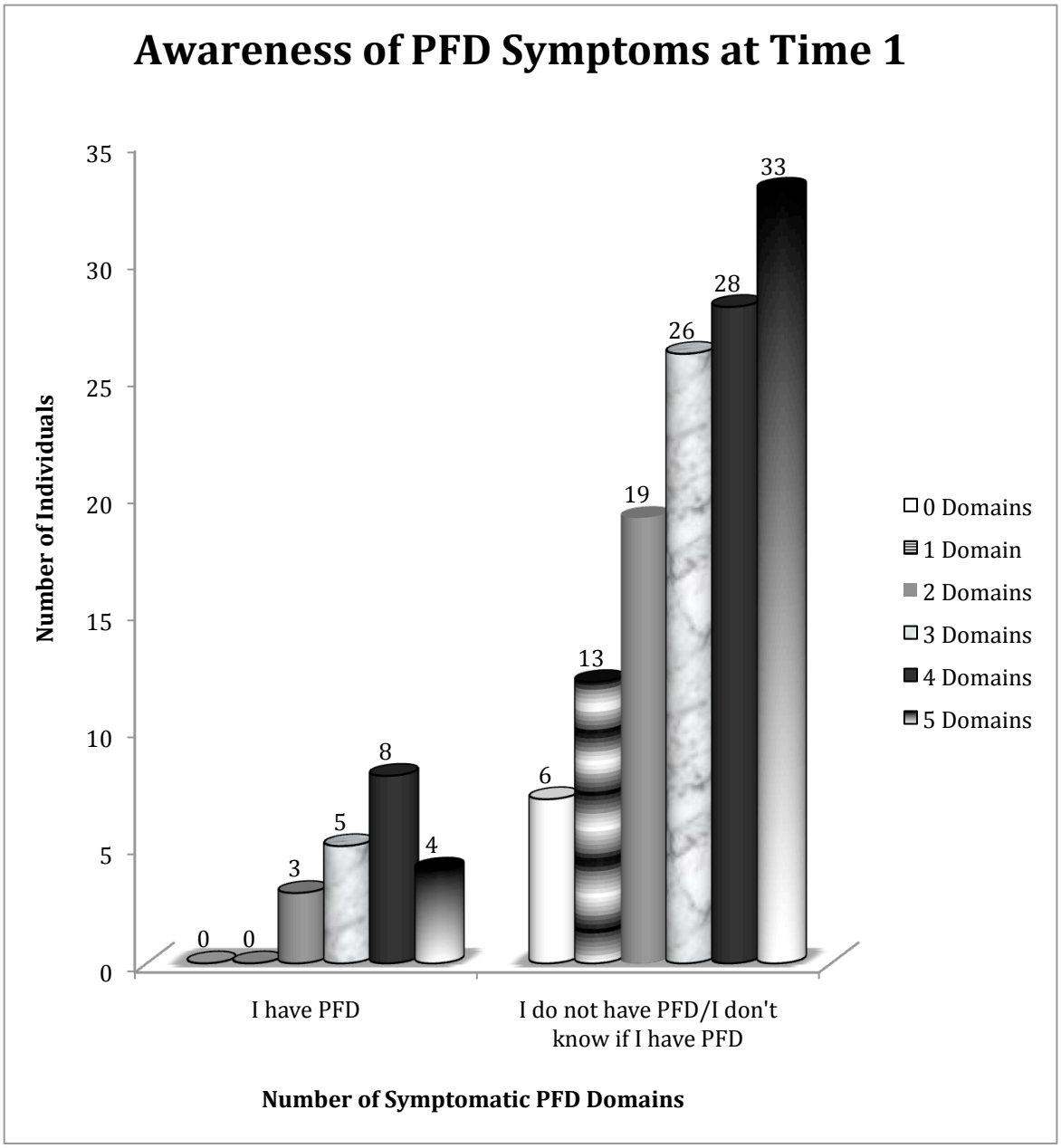


Figure 24b. Intervention-Participants' Awareness to the Presence of PFD at Time 3 (Groups A & B Only)

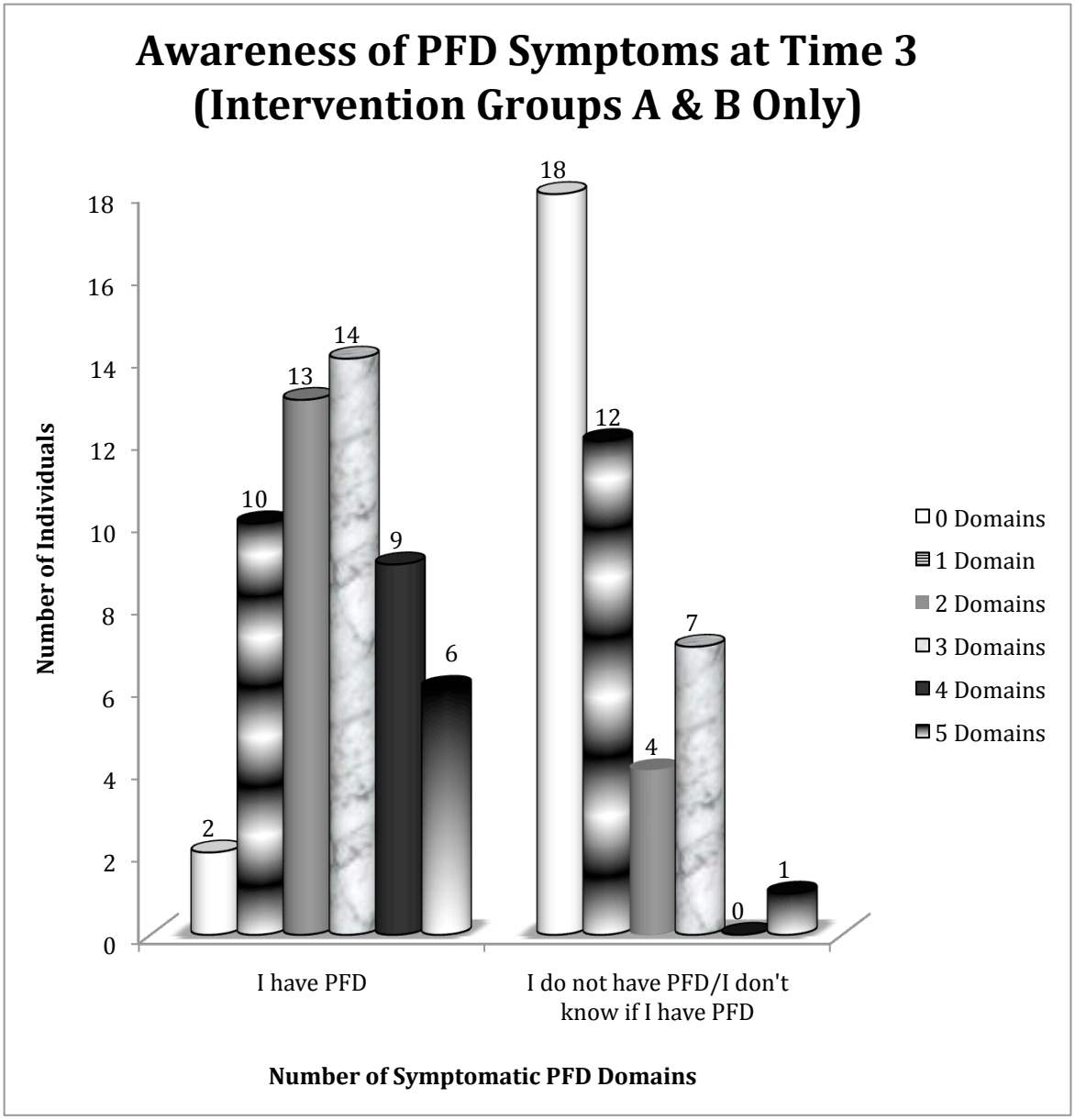
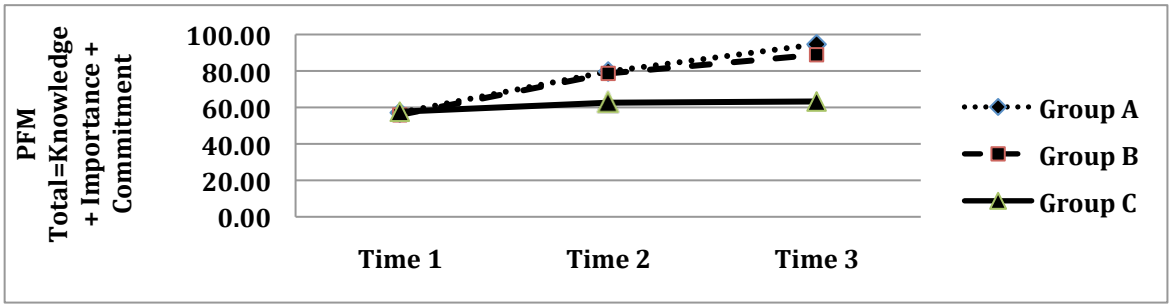
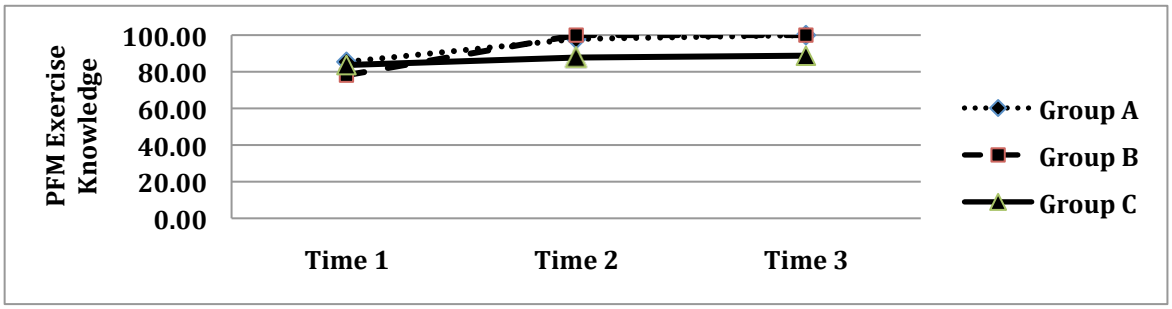


Figure 25. Results of PFM Exercise Indices Over Times 1, 2 and 3

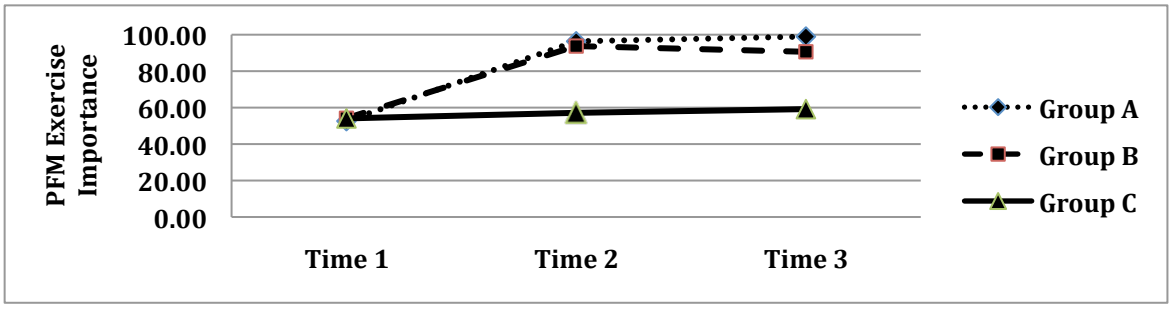
Index PFM Total (Knowledge + Importance + Commitment) for Groups A, B and C Over Times 1, 2 and 3:



Index PFM Exercise Knowledge for Groups A, B and C Over Times 1, 2 and 3:



Index PFM Exercise Importance for Groups A, B and C Over Times 1, 2 and 3:



Index PFM Exercise Commitment for Groups A, B and C Over Times 1, 2 and 3:

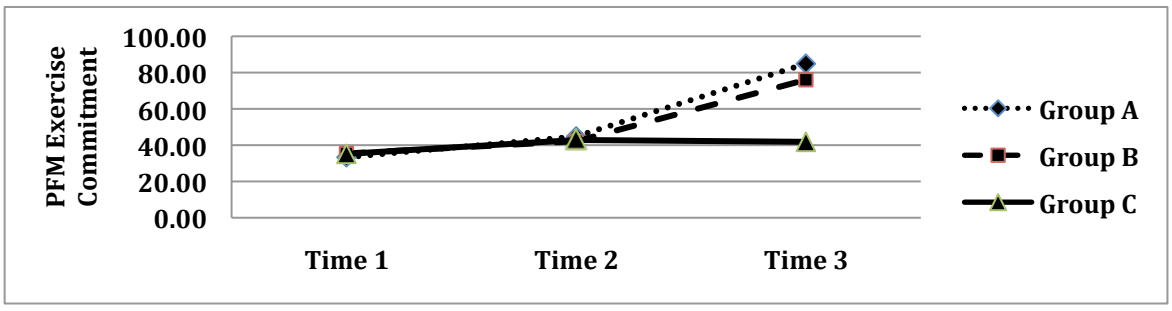


FIGURE LEGENDS

Figure 1. Female Pelvis

This figure illustrates the location of the PFM within the female pelvis via a side view. It also depicts the openings of the urethra, vagina and rectum, via the PFM and the PFM attachment to the pubic bones, anteriorly, and the coccyx, posteriorly.

Figure 2. Anatomy of the PFM

This figure illustrates the anatomy of the PFM via an inferior angle of the pelvis. It identifies the differing segments such as the ischiocavernosus, bulbospongiosus, and pubococcygeus muscles.

Figure 3a. Ineffective PFM Closure on Bladder Leads to Incontinence

This side view figure illustrates an ineffective PFM closure around the urethra of the bladder. When intra-abdominal pressure increases producing force on the external bladder wall, the contents of the bladder will move toward the bladder neck and urethra. If the PFM is not effectively closing the urethra with sufficient pressure, then leakage of urine will result.

Figure 3b. Effective PFM Closure on Bladder Promotes Continence

This side view figure illustrates an effective PFM closure around the urethra of the bladder. When intra-abdominal pressure increases producing force on the external bladder wall, the contents of the bladder will move toward the bladder neck and urethra. As the PFM is effectively closing the urethra with sufficient pressure, no leakage of urine results and continence is maintained.

Figure 4a. High Water Level: Ropes Lax/Tension-Free

This figure illustrates the high water level offering support to the vessel from below. This allows the ropes to remain tension-free with no stress pulling in the downward direction.

Figure 4b. Low Water Level: Ropes Taut/Under Tension

This figure illustrates the low water level, no longer offering support to the vessel from below. The resultant downward pull on the ropes leads to tension on the taut rigging.

Figure 4c. Low Water Level Remains: Over Time Ropes Stretch/Fray

This figure illustrates the maintaining of low water level, and the effect of a lack of inferior support over time. The continued downward pull and stress on rigging can lead to stretching and fraying of the ropes and degradation of the support structures.

Figure 5. PFD Symptoms Measured by PFDI-20(+2) Items

This figure illustrates the various PFD symptoms that can be detected by the PFDI-20(+2) tool. PFD (measured in PFDI items 1-22) presents in its 5 forms; bladder dysfunction (measured in PFDI items 5, 6, 15-19), bowel dysfunction (measured in PFDI items 4, 7-14), POP (measured in PFDI items 1-6, 14), pelvic pain (measured in PFDI items 12, 21, 22) and sexual dysfunction (measured in PFDI items 21, 22). The 22 items of the PFDI-20(+2) further identify the 3 sub-categories within bladder dysfunction; obstructive bladder micturition (measured in PFDI items 5, 6, 19), urinary frequency (measured in PFDI item 15) and urinary incontinence (measured in PFDI items 16-18), plus the 3 sub-categories with bowel dysfunction; obstructive bowel evacuation (measured in PFDI items 4, 7, 8), bowel urgency (measured in PFDI item 13) and bowel incontinence (measured in PFDI items 9-11). Both incontinence sub-categories can be further divided into stress urinary incontinence (measured in PFDI item 17) and urgency urinary incontinence (measured in PFDI item 16) for bladder incontinence, and fecal incontinence (measured in PFDI items 9, 10) and flatual incontinence (measured in PFDI item 11) for bowel incontinence.

Figure 6. Age of Participants

This figure summarizes the similarity in age between the three study groups. Age categories in years are listed along the x-axis with the number of individuals filling each age category along the y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C (n=49), is depicted in grey for ease of visual comparison. There were five age categories used with 14 participants falling between ages '18-29' (Group A n=5, Group B n=4 and Group C n=5), 32 participants selecting ages '30-39' (Group A n=11, Group B n=11 and Group C n=10), 48 participants within the '40-49' age category (Group A n=15, Group B n=15 and Group C n=18), 47 participants aged '50-59' (Group A n=16, Group B n=17 and Group C n=14), and the remaining four participants comprised the '60-69' age category (Group A n=1, Group B n=1 and Group C n=2). All three groups ranged between the '18-29' and '60-69' categories with the age '40-49' being the most frequently selected category for Group C participants and '50-59' categories being most highly populated category for Group A and B participants. Each of the age categories was highly similar for each of the 3 groups. With a Chi Square p-value=0.995, the probability that the groups are homogeneous with regard to age is more than 99%.

Figure 7. Highest Level of Education of Participants

This figure summarizes the similarity in education between the three study groups. Education categories are listed along the x-axis with the number of individuals filling each education category along the y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C

(n=49), is depicted in grey for ease of visual comparison. There were seven education categories used with one participant selecting 'Less than High School' (Group A n=1, Group B n=0 and Group C n=0), 18 participants selecting 'High School Graduate' (Group A n=6, Group B n=4 and Group C n=8), 16 participants within the 'Some College' category (Group A n=4, Group B n=3 and Group C n=9), 32 participants achieved 'College Graduate' status (Group A n=10, Group B n=10 and Group C n=12), 29 participants noted 'Some University' (Group A n=13, Group B n=7 and Group C n=9), 34 selected 'University Under-graduate Degree' obtained (Group A n=13, Group B n=14 and Group C n=7) and the remaining 15 participants comprised the 'University Graduate Degree' category (Group A n=1, Group B n=10 and Group C n=4) as their highest level of education achieved. The most frequently selected categories for Group A were 'Some University' (n=13) and 'University Under-Graduate Degree' (n=13). For Group B, the highest representation was noted in the 'University Under-graduate Degree' category (n=14), and 'College Graduate' was the highest category Group C (n=12). Each of the education categories was similar for each of the three groups. With a Chi Square p-value=0.108, the probability that the groups are homogeneous is more than 11%.

Figure 8. Marital Status of Participants

This figure summarizes the similarity in marital status between the three study groups. Marital status categories are listed along the x-axis with the number of individuals filling each marital status category along the y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C (n=49), is depicted in grey for ease of visual comparison. There were five marital categories available with 22 participants selecting 'Single, Never Married'

(Group A n=5, Group B n=10 and Group C n=7), 96 participants selecting 'Married' (Group A n=38, Group B n=26 and Group C n=32), three participants within the 'Separated' category (Group A n=0, Group B n=2 and Group C n=1), 22 participants were 'Divorced' (Group A n=4, Group B n=10 and Group C n=8), and the remaining two participants comprised the 'Widowed' category (Group A n=1, Group B n=0 and Group C n=1) as the response best representing their current marital status. The most frequently selected category for all three groups was 'Married'. Each of the marital status categories was found to be similar for each of the three groups, and no significant differences were determined. With a Chi Square p-value=0.296, the probability that the groups are homogeneous with regard to marital status, is more than 30%.

Figure 9. Annual Household Income of Participants

This figure summarizes the similarity in annual household income between the three study groups. Income categories are listed along the x-axis with the number of individuals filling each income category along the y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C (n=49), is depicted in grey for ease of visual comparison. There were six income categories available with one participant selecting 'Less than $29,999' (Group A n=1, Group B n=0 and Group C n=0), 17 participants selected '$30,000-49,999' (Group A n=6, Group B n=5 and Group C n=6), 23 participants within the '$50,000-69,999' category (Group A n=6, Group B n=8 and Group C n=9), 36 participants completed the '$70,000-99,999' category (Group A n=11, Group B n=15 and Group C n=10), 52 selection 'More than $100,000' (Group A n=20, Group B n=13 and Group C n=19), and the remaining 16 participants chose 'Prefer to not answer' (Group A n=4, Group B n=7

and Group C n=5). The most frequently selected category for Groups A and C was 'More than $100,000' (Group A n=20, Group C n=19, and '$70,000-99,999' for Group B (n=15). With a Chi Square p-value=0.710, the probability that the groups are homogeneous with regard to annual household income, is greater than 71%.

Figure 10. Race/Ethnicities of Participants

This figure summarizes the similarity in race/ethnicity composition of the three study groups. Race categories are listed along the x-axis with the number of individuals filling each race category along the y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C (n=49), is depicted in grey for ease of visual comparison. There were six ethnicity categories with five being represented by the participants, as no participants identified 'African American' as their race. In total, 130 participants selected 'Caucasian (not including Hispanic)' (Group A n=42, Group B n=43 and Group C n=45), three participants selected 'Hispanic' (Group A n=1, Group B n=1 and Group C n=1), three participants within the 'Asian' category (Group A n=1, Group B n=2 and Group C n=0), seven participants comprised the 'Metis/Native' category (Group A n=3, Group B n=1 and Group C n=3), and the remaining two participants selected 'East Indian' (Group A n=1, Group B n=1 and Group C n=0). The most frequently selected category for all three groups was 'Caucasian (not including Hispanic)' (Group A n=42, Group B n=43 and Group C n=45). Each of the race/ethnicity categories was found to be similar for each of the three groups. With a Chi Square p-value=0.928, the probability that the groups are homogeneous with regard to race/ethnicity, is greater than 92%.

Figure 11. Overall Health Status of Participants

This figure summarizes the similarity in overall health status of the three study groups. Health categories are listed along the x-axis with the number of individuals filling each health category along the y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C (n=49), is depicted in grey for ease of visual comparison. There were three health categories offered with all three being represented by the participants. In total, 55 participants selected 'Very Healthy' (Group A n=18, Group B n=17 and Group C n=20), 88 participants selected 'Average Health' (Group A n=28, Group B n=31 and Group C n=29), and two participants within the 'Poor Health' category (Group A n=2, Group B n=0 and Group C n=0). The most frequently selected category for all three groups was 'Average Health' (Group A n=28, Group B n=31 and Group C n=29). With a Chi Square p-value=0.920, the probability that the three groups are homogenous with regard to overall health status is greater than 92%.

Figure 12. Number of Pregnancies of Participants

This figure summarizes the similarity in pregnancy history between the three study groups. Number of pregnancy categories is listed along the x-axis with the number of individuals filling each pregnancy category along the y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C (n=49), is depicted in grey for ease of visual comparison. There were six 'number of pregnancies' categories available with 39 participants selecting '0' (Group A n=13, Group B n=14 and Group C n=12), 22 participants selected '1' (Group A n=7,

Group B n=10 and Group C n=5), 40 participants within the '2' category (Group A n=12, Group B n=11 and Group C n=17), 26 participants completed the '3' category (Group A n=11, Group B n=6 and Group C n=9), 7 selected '4' (Group A n=4, Group B n=1 and Group C n=2), and the remaining 11 participants chose '5 or more' (Group A n=1, Group B n=6 and Group C n=4). The most frequently selected category for Groups A and B was '0' pregnancies (Group A n=13, Group B n=14), and for Group C, '2' pregnancies were the most common choice (n=17). With a Chi Square p-value=0.523, the probability that the three groups are homogeneous with regard to the number of pregnancies experienced is greater than 52%.

Figure 13. Number of Vaginal Deliveries of Participants

This figure summarizes the similarity in pregnancy history between the three study groups. Number of 'vaginal deliveries' categories is listed along the x-axis with the number of individuals filling each 'vaginal deliveries' category along the y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C (n=49), is depicted in grey for ease of visual comparison. There were six 'number of vaginal deliveries' categories available with 59 participants selecting '0' (Group A n=21, Group B n=20 and Group C n=18), 26 participants selected '1' (Group A n=5, Group B n=13 and Group C n=8), 39 participants within the '2' category (Group A n=14, Group B n=8 and Group C n=17), 17 participants completed the '3' category (Group A n=7, Group B n=5 and Group C n=5), two selected '4' (Group A n=1, Group B n=1 and Group C n=0), and the remaining two participants chose '5 or more' (Group A n=0, Group B n=1 and Group C n=1). The most frequently selected category for Groups A, B and C was '0' vaginal deliveries (Group A n=21, Group B

n=20, Group C n=18). With a Chi Square p-value=0.50, the probability that the three groups are homogeneous with regard to the number of vaginal deliveries experienced is greater than 50%.

Figure 14. Number of Caesarean Sections of Participants

This figure summarizes the similarity in pregnancy history between the three study groups. Number of 'caesarean section deliveries' categories is listed along the x-axis with the number of individuals filling each 'caesarean section' category along the y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C (n=49), is depicted in grey for ease of visual comparison. There were six 'number of caesarean section deliveries' categories available only the first four represented. For the option '0' caesarean sections, 126 participants selecting this (Group A n=41, Group B n=40 and Group C n=45), 12 participants selected '1' (Group A n=5, Group B n=5 and Group C n=2), six participants within the '2' category (Group A n=2, Group B n=3 and Group C n=1), and the remaining participant completed the '3' category (Group A n=0, Group B n= and Group C n=1). The most frequently selected category for Groups A, B and C was '0' caesarean section deliveries (Group A n=41, Group B n=40, Group C n=45). With a Chi Square p-value=0.612, the probability that the three groups are homogeneous with regard to the number of caesarean section deliveries experienced is greater than 61%.

Figure 15. Birthing Interventions of Participants

This figure summarizes the similarity in obstetrical history regarding birthing interventions between the three study groups. The five birthing interventions studies are

listed along the x-axis with the number of individuals filling each birthing intervention category along the y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C (n=49), is depicted in grey for ease of visual comparison.

For 'Epidurals', Group A n=20, Group B n=24, Group C n=20 with a Chi Square p=0.604, showing that the probability of the three groups being homogeneous with regard to the number of epidurals experienced is greater than 60%. For 'Episiotomy', Group A n=12, Group B n=14, Group C n=19 with a Chi Square p=0.322 showing that the probability of the three groups being homogeneous is greater than 32%. For 'Perineal Tear', Group A n=15, Group B n=16, Group C n=17 with a Chi Square p=0.936 showing that the probability of the three groups being homogeneous with regard to perineal tearing is greater than 94%. For 'Vacuum Extraction', Group A n=1, Group B n=4, Group C n=4 with a Chi Square p=0.350 showing that the probability of the three groups being homogeneous with regard to vacuum extraction is greater than 35%. For the intervention 'Forceps Extraction', Group A had 10 participants experiencing forceps during delivery, Group B had 13, and Group C had 10, with a Chi Square p=0.682 showing that the probability of the three groups being homogeneous with regard to forceps extraction is greater than 68%. The birthing intervention with the highest representation was epidural and the least was vacuum extraction.

Figure 16. Total Birthing Interventions of Participants

This figure summarizes the similarity in obstetrical history regarding total number of birthing interventions between the three study groups. The Groups A, B and C at Time 1 are listed along the x-axis with the mean total of birthing interventions listed along the

y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C (n=49), is depicted in grey for ease of visual comparison. For the mean 'Total Birthing Interventions' experienced by each participant, Group A reported an average of 1.21 birthing interventions, Group B showed an average of 1.48 for each participant, and Group C equaled a mean of 1.43 birthing interventions per participant. The p-value of 0.571 supports the homogeneity between the three groups in the total number of birthing interventions experienced.

Figure 17. Menstrual Status of Participants

This figure summarizes the similarity in menstrual status between the three study groups. The Menstrual Stage categories are listed along the x-axis with the number of individuals filling each menstrual category along the y-axis. The Group A population (n=48) is represented in white, Group B (n=48) appears in black, and the control group, Group C (n=49), is depicted in grey for ease of visual comparison. There were five menstrual stage categories available with 74 participants selecting 'Regular Periods' (Group A n=23, Group B n=23 and Group C n=28), 15 participants selected 'Irregular Periods' (Group A n=6, Group B n=5 and Group C n=4), one participant within the 'Currently Pregnant' category (Group A n=0, Group B n=1 and Group C n=0), 19 participants completed the 'Peri-menopausal' category (Group A n=6, Group B n=9 and Group C n=4), and the remaining 36 participants chose 'Menopausal' (Group A n=13, Group B n=10 and Group C n=13). The most frequently selected category for Groups A, B and C was 'Regular Periods' (Group A n=23, Group B n=23, Group C n=28). With a Chi Square p-value=0.696, the probability that that three groups are homogeneous with regard to menstrual status is approximately 70%.

Figure 18. Results of PIKQ Indices Over Times 1, 2 and 3

These charts illustrate the change in PIKQ-related indices over Times 1, 2 and 3 for Groups A, B and C. Group A is noted with a dotted line, Group B is represented with a dashed line, and Group C (the control group) is marked with a solid black line.

For the complete PIKQ index (24-items), all three groups began at a basically equal level of pelvic floor health knowledge, at Time 1. Following the pelvic floor health education intervention (given to Groups A and B), Groups A and B note an equal and dramatic rise in incontinence and POP knowledge levels while Group C remains fairly unaffected, at Time 2. Following the re-education intervention (given to Group A only), a continued rise in knowledge levels is noted for both Groups A and B; however, a slightly greater rise for Group A compared to Group B. The slope for the two intervention groups is not nearly as steep between Times 2 and 3 as compared to the slope between Time 1 and Time 2. The slope for Group A was restricted by a 'ceiling effect' as the maximum score was reached. Very little change is noted between Times 1, 2 and 3 for Group C.

For the PIKQ-Incontinence index (12-items), all three groups began at a basically equal level of pelvic floor health knowledge, at Time 1. Following the pelvic floor health education intervention given to Groups A and B, these two groups note a fairly equal and dramatic rise in incontinence knowledge levels and reach close to maximum levels, while Group C remains unaffected, at Time 2. Following the re-education intervention given to Group A only, a continued rise in knowledge levels for Group A, was noted albeit a small increase due to a 'ceiling effect'; however, a slight decrease in knowledge level was noted for Group B. Group C remained fairly constant between Time 1, Time 2 and Time 3.

For the PIKQ-POP index (12-items), all three groups began at a basically equal level of pelvic floor health knowledge, at Time 1. This reference point was notably lower than the starting point for incontinence knowledge at Time 1. Following the pelvic floor health education intervention given to Groups A and B, these two groups note an equal and dramatic rise of POP knowledge levels while Group C noted a minor drop in POP knowledge, at Time 2. Following the re-education intervention given to Group A only, a continued rise in knowledge levels is noted for both Groups A and B; however, a greater rise is noted for Group A compared to Group B, with Group A reaching a maximum 'ceiling effect'. The slope for Group B was not as steep between Times 2 and 3 as compared to the slope between Time 1 and Time 2. For Group C, a minor overall change was noted between Times 1, 2 and 3, with a slight drop detected at Time 2 followed by a an increase in POP-related knowledge at Time 3.

Figure 19. Results of PFDI-20 Indices Over Times 1 and 3

These charts illustrate the change in indices developed from the PFDI-20 data over Times 1 and 3 for Groups A, B and C. Group A is noted with a dotted line, Group B is represented with a dashed line, and Group C (the control group) is marked with a solid black line.

For the complete PFDI-20 index, all three groups began at a basically equal level, at Time 1, with Group A being slightly higher in PFD symptomology than the other two groups. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic decline in PFD symptom levels while Group C remains fairly unaffected, at

Time 3. In fact, the control group noted a minor increase in PFD symptoms between Time 1 and Time 3. Also notable was the fact that Group A showed a slightly greater decrease in PFD symptoms over time, when compared to Group B.

For the UDI index (Domain Bladder Dysfunction of the PFDI-20), all three groups began at a basically equal level, at Time 1, with Group A being slightly higher in bladder-related PFD symptomology than the other two groups. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic decline in bladder-related PFD symptom levels while Group C remains fairly unaffected at Time 3 with, in fact, a slight increase in PFD symptoms noted. Interestingly, Group A showed a slightly greater decrease in bladder dysfunction symptoms over time, when compared to Group B.

For the CRADI index (Domain Bowel Dysfunction of the PFDI-20), all three groups began at a basically equal level, at Time 1, with Group C being slightly higher in bowel-related PFD symptomology than the other two groups. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic and basically equal decline in bowel dysfunction symptom levels, with Group A showing a slightly steeper slope, while Group C remains fairly unaffected at Time 3.

For the POPDI index (Domain POP of the PFDI-20), all three groups began at a basically equal level at Time 1, with Group A being slightly higher in POP-related PFD symptomology than the other two groups. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic decline in POP symptom levels while Group C

remains fairly unaffected at Time 3. In fact, the control group noted a minor increase in POP-related PFD symptoms between Time 1 and Time 3. Also notable was the fact that Group A showed a greater decrease in POP-related PFD symptoms over time, when compared to Group B.

Figure 20. Results of PFDI-20(+2) Indices Over Times 1 and 3

These charts illustrate the change in indices developed from the PFDI-20(+2) data over Times 1 and 3 for Groups A, B and C. Group A is noted with a dotted line, Group B is represented with a dashed line, and Group C (the control group) is marked with a solid black line.

For the complete PFDI-20(+2) index, all three groups began at a basically equal level of PFD symptomology, at Time 1. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic, and fairly equal, decline in PFD symptom levels while Group C remains fairly unaffected at Time 3.

For the Bladder Dysfunction index (Domain Bladder Dysfunction of the PFDI-20(+2)), all three groups began at a basically equal level at Time 1, with Group A being slightly higher in bladder-related PFD symptomology than the other two groups. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic decline in bladder-related PFD symptom levels while Group C notes a slight increase in bladder dysfunction at Time 3. Interestingly, Group A showed a slightly greater decrease in bladder-related PFD symptoms over time, when compared to Group B.

For the Bowel Dysfunction index (Domain Bowel Dysfunction of the PFDI-20(+2)), all three groups began at a basically equal level at Time 1, with Group C being slightly higher in bowel-related PFD symptomology than the other two groups. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic and basically equal decline in PFD symptom levels while Group C remains fairly unaffected, at Time 3.

For the POP index (Domain POP of the PFDI-20(+2)), all three groups began at a basically equal level at Time 1. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic decline in PFD symptom levels while Group C remains fairly unaffected at Time 3. In fact, the control group noted a minor increase in POP-related PFD symptoms between Time 1 and Time 3. Also notable was the fact that Group A showed a greater decrease in POP-related PFD symptoms over time, when compared to Group B.

For the Pelvic Pain index (Domain Pelvic Pain of the PFDI-20(+2)), all three groups began at a basically equal level at Time 1. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic and basically equal decline in pelvic pain symptom levels while Group C remains fairly unaffected at Time 3.

For the Sexual Dysfunction index (Domain Sexual Dysfunction of the PFDI-20(+2)), all three groups began at a basically equal level at Time 1. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education

intervention (given to Group A only), Groups A and B note a dramatic and basically equal decline in Sexual Dysfunction symptom levels while Group C notes a slight increase in sexual dysfunction symptoms at Time 3. Interestingly, Group B shows a more dramatic decrease in sexual dysfunction symptoms compared to Group A.

Figure 21. Results of PFIQ-7 Indices Over Times 1 and 3

These charts illustrate the change in indices developed from the PFIQ-7 data over Times 1 and 3 for Groups A, B and C. Group A is noted with a dotted line, Group B is represented with a dashed line, and Group C (the control group) is marked with a solid black line.

For the complete PFIQ-7 index, all three groups began at a basically equal level of PFD having a negative impact QoL at Time 1. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic and equal decline in PFD symptom negatively affecting QoL while Group C remains fairly unaffected at Time 3.

For the UIQ index (Domain Bladder Dysfunction of the PFIQ-7), all three groups began at a basically equal level at Time 1. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic decline in bladder-related PFD symptoms negatively affecting QoL, while Group C showed a slight increase in bladder symptoms negatively impacting QoL at Time 3.

For the CRAIQ index (Domain Bowel Dysfunction of the PFIQ-7), all three groups began at a basically equal level at Time 1. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention

(given to Group A only), Groups A and B note a dramatic and basically equal decline in bowel dysfunction symptom level impact on QoL, while Group C showed a slight increase in bowel symptoms negatively impacting QoL at Time 3.

For the POPIQ index (Domain POP of the PFIQ-7), all three groups began at a basically equal level at Time 1. Following the pelvic floor health education intervention (given to Groups A and B) and the re-education intervention (given to Group A only), Groups A and B note a dramatic decline in POP symptom level negatively impacting QoL, while Group C remains fairly unaffected at Time 3. A notable finding was that Group B showed a greater decrease in POP-related impact on QoL over time, when compared to Group A.

Figure 22a. Symptomatic PFD Domains: Compare 3 Groups at Time 1

This figure depicts the number of participants experiencing co-occurring PFD at Time 1 and compares Groups A (n=48), B (n=48) and C (n=49). The x-axis reflects the number of symptomatic PFD domains (from zero, participants who have no PFD, up to a possible five symptomatic domains, i.e. participants with PFD symptoms of bladder dysfunction, bowel dysfunction, POP, pelvic pain and sexual dysfunction), for each of Group A (white column), Group B (black column) and Group C (grey column). The y-axis reflects the number of participants comprising each category.

At Time 1, Group A had three participants, Group B also had three participants, and Group C had zero participants with no symptoms of PFD. For a single symptomatic domain, Group A=3, Group B=4 and Group C=6 participants. When reviewing the number of participants with two symptomatic domains, Group A=5, Group B=7 and

Group C=10. For those participants with three of five domains symptomatic, Group A=10, Group B=14 and Group C=7. For the number of participants having four of five PFD domains symptomatic, Group A=14, Group B=8 and Group C=14. And finally, when looking at participants who noted symptoms in all possible PFD domains, Group A=13, Group B=12 and Group C=12. At baseline, the three groups were similarly comprised between numbers of symptomatic PFD domains.

Figure 22b. Symptomatic PFD Domains: Compare 3 Groups at Time 3

This figure depicts the number of participants experiencing co-occurring PFD at Time 3 and compares Groups A (n=48), B (n=48) and C (n=49). The x-axis reflects the number of symptomatic PFD domains (from zero, participants who have no PFD, up to a possible five symptomatic domains, i.e. participants displayed PFD symptoms of bladder dysfunction, bowel dysfunction, POP, pelvic pain and sexual dysfunction), for each of Group A (white column), Group B (black column) and Group C (grey column). The y-axis reflects the number of participants comprising each category.

Time 3, Group A had 11 participants, Group B had nine participants, and Group C had three participants with no symptoms of PFD. For a single symptomatic domain, Group A=10, Group B=10 and Group C=7 participants. When reviewing the number of participants with two symptomatic domains, Group A=9, Group B=8 and Group C=9. For those participants with three of five domains symptomatic, Group A=12, Group B=12 and Group C=9. For the number of participants having four of five PFD domains symptomatic, Group A=1, Group B=7 and Group C=8. And finally, when looking at

participants who noted symptoms in all possible PFD domains, Group A=5, Group B=2 and Group C=13.

Figure 23a. Symptomatic PFD Domains of Group A at Time 1 and Time 3

This figure depicts the number of participants from Group A (n=48) experiencing co-occurring PFD at Time 1 versus Time 3. The x-axis reflects the number of symptomatic PFD domains (from zero, participants who have no PFD, up to a possible five symptomatic domains, i.e. participants displayed PFD symptoms of bladder dysfunction, bowel dysfunction, POP, pelvic pain and sexual dysfunction), for each of Time 1 (white column) and Time 3 (black column). The y-axis reflects the number of participants comprising each category.

For the PFD-free category, or 'zero domains' symptomatic, Group A had only three representatives at Time 1 but at the completion of the research study, Time 3, 11 participants had no PFD symptoms. At Time 1, three participants of Group A had PFD symptoms in a single domain; however, at Time 3 this number had increased to ten participants. In the category of two symptomatic domains, Time 1 had five participants and this number increased to nine participants at Time 3. At Time 1, there were ten participants of Group A displaying three symptomatic domains with this category increasing to 12 by Time 3. A dramatic decrease was noted in participants experiencing four and five symptomatic domains with 14 and 13 members respectively, at Time 1, dropping to one and five, respectively, at Time 3.

Figure 23b. Symptomatic PFD Domains of Group B at Time 1 and Time 3

This figure depicts the number of participants from Group B (n=48) experiencing co-occurring PFD at Time 1 versus Time 3. The x-axis reflects the number of symptomatic PFD domains (from zero, participants who have no PFD, up to a possible five symptomatic domains, i.e. participants displayed PFD symptoms of bladder dysfunction, bowel dysfunction, POP, pelvic pain and sexual dysfunction), for each of Time 1 (white column) and Time 3 (black column). The y-axis reflects the number of participants comprising each category.

For the PFD-free category, or 'zero domains' symptomatic, Group B had only three representatives at Time 1 but at the completion of the research study, Time 3, nine participants had no PFD symptoms. At Time 1, four participants of Group B had PFD symptoms in a single domain; however, at Time 3 this number had increased to ten participants. In the category of two symptomatic domains, Time 1 had seven participants and this number increased to eight participants at Time 3. At Time 1, there were 14 participants of Group B displaying three symptomatic domains with this category decreasing to 12 by Time 3. The eight participants displaying symptoms in four of the PFD domains at Time 1 decreased to seven at Time 3. A dramatic decrease in participants experiencing five symptomatic domains was noted with 12 participants, at Time 1, dropping to two at Time 3.

Figure 23c. Symptomatic PFD Domains of Group C at Time 1 and Time 3

This figure depicts the number of participants from Group C (n=49) experiencing co-occurring PFD at Time 1 versus Time 3. The x-axis reflects the number of symptomatic PFD domains (from zero, participants who have no PFD, up to a possible five symptomatic domains, i.e. participants displayed PFD symptoms of bladder dysfunction, bowel dysfunction, POP, pelvic pain and sexual dysfunction), for each of Time 1 (white column) and Time 3 (black column). The y-axis reflects the number of participants comprising each category.

For the PFD-free category, or 'zero domains' symptomatic, Group C had zero representatives at Time 1 but at the completion of the research study, Time 3, three participants had no PFD symptoms. At Time 1, six participants of Group C had PFD symptoms in a single domain, and at Time 3 this number had increased to seven participants. In the category of two symptomatic domains, Time 1 had ten participants and nine participants at Time 3. At Time 1, there were seven participants of Group C displaying three symptomatic domains with this category increasing to nine by Time 3. The number of Group C participants experiencing four and five symptomatic domains was14 and 12, respectively, at Time 1, and eight and 13, respectively, at Time 3.

Figure 24a. Participants' Awareness to the Presence of PFD at Time 1

This figure depicts the number of participants experiencing co-occurring PFD and their awareness to their PFD symptoms. The x-axis reflects the number of symptomatic PFD domains at Time 1, and separates those who recognize the presence of PFD

symptoms (on the left) from those stating that they do not have PFD or do not know if they have PFD (on the right). The y-axis reflects the number of participants comprising each category. The white column denotes the category of '0 Domains', i.e. these participants have no PFD symptoms, the stripe pattern is used of '1 Domain' symptomatic, grey represents '2 Domains' symptomatic, marble pattern corresponds to '3 Domains' symptomatic, black was used for '4 Domains' symptomatic, and white-to-black fading pattern represents those with all five of '5 Domains' symptomatic.

A total of 20 of the 145 participants noted that they had PFD, while 125 of the 145 stated that they did not have PFD or that they did not know if they had PFD. For the 20 who recognized the presence of PFD, three had symptoms in two PFD domains, five had three dysfunctional domains, eight had four PFD domains, and four had symptoms in all five possible domains.

With regard to the 125 participants who stated that they did not have PFD or did not know if they had PFD, six were correct as they did not have symptoms in any of the five PFD domains, 13 showed symptoms in a single domain, 19 had symptoms in two domains, 26 had three dysfunctional domains, 28 had symptoms in four domains, and 33 did not state that they had PFD when experiencing symptoms in all five possible PFD domains.

Figure 24b. Intervention-Participants' Awareness to the Presence of PFD at Time 3 (Groups A & B Only)

This figure depicts the number of intervention participants (Groups A and B only) experiencing co-occurring PFD and their awareness to their PFD symptoms. For this

comparison, the control group (Group C) has been removed from the data, as they did not receive the education intervention(s). The x-axis reflects the number of symptomatic PFD domains at Time 3, and separates those that recognize the presence of PFD symptoms (on the left) from those stating that they do not have PFD or do not know if they have PFD (on the right). The y-axis reflects the number of participants comprising each category. The white column denotes the category of '0 Domains', i.e. these participants have no PFD symptoms, the stripe pattern is used of '1 Domain' symptomatic, grey represents '2 Domains' symptomatic, marble pattern corresponds to '3 Domains' symptomatic, black was used for '4 Domains' symptomatic, and white-to-black fading pattern represents those with all five of '5 Domains' symptomatic.

A total of 54 of the 96 intervention participants stated that they had PFD, while 42 of the 96 stated that they did not have PFD or that they did not know if they had PFD. For the 54 that recognized the presence of PFD, two did not actually have symptoms shown on the PFDI-20(+2), 10 had symptoms in a single domain, 13 had symptoms in two PFD domains, 14 had three dysfunctional domains, nine had four PFD domains, and six had symptoms in all five possible domains.

With regard to the 42 intervention participants who stated that they did not have PFD or did not know if they had PFD, 18 were correct as they did not have symptoms in any of the five PFD domains, 12 showed symptoms in a single domain, four had symptoms in two domains, seven had three dysfunctional domains, zero had symptoms in four domains, and a single intervention participant stated that she did not have, or know if she had PFD when actually experiencing symptoms in all five possible PFD domains.

Figure 25. Results of PFM Exercise Indices Over Times 1, 2 and 3

These charts illustrate the change in indices related to the PFM Exercise data over Times 1, 2 and 3 for Groups A, B and C. Group A is noted with a dotted line, Group B is represented with a dashed line, and Group C (the control group) is marked with a solid black line.

For the PFM Total index, knowledge, importance and commitment toward PFM exercise were all included. At Time 1, this index showed the same starting point for all three groups. At Time 2, following the education intervention, a dramatic and equal increase was noted for Groups A and B, with no real change evident for Group C. This significant increase continued for Groups A and B (slightly more so for Group A than Group B) between Times 2 and 3, while Group C remained relatively unaffected throughout Times 1, 2 and 3.

For the PFM Exercise Knowledge index, all three groups began at a basically equal level at Time 1. It is notable that the starting point for knowledge was fairly high for all three groups. Following the pelvic floor health education intervention (given to Groups A and B), Groups A and B note an equal and dramatic rise in PFM exercise-related knowledge levels while Group C remains fairly unaffected, at Time 2. Following the re-education intervention (given to Group A only), no change was noted for Group A or B since both groups were restricted by a 'ceiling effect' as the maximum score had been reached at Time 2. Very little change is noted between Times 1, 2 and 3 for Group C.

For the PFM Exercise Importance index, all three groups began at a basically equal and midpoint level at Time 1. Following the pelvic floor health education

intervention (given to Groups A and B), Groups A and B note a fairly equal and dramatic rise in PFM exercise importance levels, reaching maximum levels, while Group C remains unaffected at Time 2. Following the re-education intervention (given to Group A only), further increase in the importance given to PFM exercise was not possible for Group A due to a 'ceiling effect' and, therefore, no change occurred between Time 2 and Time 3 for this 're-education' group. Interestingly, a slight decrease in importance level was noted for Group B between Time 2 and Time 3. Group C remained fairly constant between Time 1, Time 2 and Time 3.

For the commitment to PFM exercise levels, all three groups began at a basically the same point at Time 1. It is notable that the starting point for commitment to PFM exercise was fairly low. Following the pelvic floor health education intervention (given to Groups A and B), no significant change was noted for any of the three groups at Time 2. However, a dramatic rise was noted for Groups A and B between Times 2 and 3, while no obvious change was noted for Group C. The slope for Group B was not quite as steep as the slope for Group A, between Times 2 and 3. For Group C, a minor overall change was noted between Times 1, 2 and 3.

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Appendix 1. Glossary of Acronyms and Terminology

ACRONYM	DEFINITION
ANOVA	Analysis of Variance
AUGS	American Urogynecologic Society
BIOPFD	Berzuk Indices of Pelvic Floor Dysfunction
BladDysf (index)	Index measuring symptoms of Domain Bladder Dysfunction
BowlDysf (index)	Index measuring symptoms of Domain Bowel Dysfunction
BowlIncnt (index)	Index measuring symptoms of bowel incontinence (flatual + fecal incontinence)
BowlUrge (index)	Index measuring symptoms of bowel urgency
CRADI	Colo-rectal-anal Distress Inventory
CRADI (index)	Index measuring symptoms of bladder dysfunction as collected on the PFDI-20
CRAIQ	Colo-rectal-anal Impact Questionnaire
CRAIQ (index)	Index measuring QoL as related to colo-rectal anal function as collected on the PFIQ-7
DF	Degrees of Freedom
Domain	A collection of several Indices pertaining to Pelvic Floor Health
e-PAQ	Electronic Pelvic Floor Assessment Questionnaire
EURIG	Epidemiology of Female Urinary Incontinence in the Greek Population
FDA	United States Food and Drug Administration
FI (index)	Index measuring symptoms of fecal incontinence
Flatual (index)	Index measuring symptoms of flatual incontinence
HavePFD (index)	Index measuring the awareness of the presence of one's own PFD symptoms
ICC	Intraclass Correlation Coeffiecient
ICS	International Continence Society
IIQ	Incontinence Impact Questionnaire
Index	A continuous variable derived from a number of items or variables
INTERV (index)	Index measuring the total number of birthing interventions
IPPS	International Pelvic Pain Society
Item	A coded question in a questionnaire
IUGA	International Urogynecology Association
Kegels	Pelvic Floor Muscle Exercises
KHQ	King's Health Questionnaire
KPOP (index)	Index measuring pelvic floor knowledge related to POP
KUI (index)	Index measuring pelvic floor knowledge related to incontinence
OAB	Overactive Bladder
ObstBlad (index)	Index measuring symptoms of obstructive bladder
ObstBowl (index)	Index measuring symptoms of obstructive bowel
PelFIs	Pelvic Floor Inventories Leiden
Pelvic Pain (index)	Index measuring symptoms of Domain Pelvic Pain
PFD	Pelvic Floor Dysfunction
PFDI	Pelvic Floor Distress Inventory
PFDI (index)	Index measuring the presence of PFD symptoms as collected on the PFDI-20
PFDI-20	Pelvic Floor Impact Questionnaire-Short Form 20
PFDI-20(+2)	Pelvic Floor Distress Inventory-Short Form 20 + 2 sexual function items
PFDI-20(+2) (index)	Index measuring PFDI-20(+2) items with each of 22 items weighted equally
PFDI-20W (index)	Index measuring PFDI-20 symptoms with each item weighted equally
PFHS	Pelvic Floor Health Study
PFinfo (index)	Index measuring pelvic floor health information seeking behaviours
PFIQ	Pelvic Floor Impact Questionnaire
PFIQ (index)	Index measuring QoL related to PFD symptoms as collected on the PFIQ-7
PFIQ-7	Pelvic Floor Impact Questionnaire-Short Form 7
PFK (index)	Index measuring the total pelvic floor knowledge base (incontinence + POP)
PFM	Pelvic Floor Muscle
PFMcommitment	Commitment to Pelvic Floor Muscle Exercise
PFMex (index)	Index measuring commitment to PFM exercise
PFMimportance	Importance of Pelvic Floor Muscle Exercise
PFMimp (index)	Index measuring importance of PFM Exercise to one's health
PFMknowledge	Knowledge of Pelvic Floor Muscle Exercise

ACRONYM	DEFINITION
PFMexK (index)	Index measuring PFM exercise knowledge level
PFMtotal	PFM Exercise Total = PFMknowledge + PFMimportance + PFMcommitment
PFMtot (index)	Index measuring total given to PFMknowledge + PFMimportance + PFMcommitment
PIKQ	Prolapse and Incontinence Knowledge Quiz
PIKQ-Incontinence	Prolapse and Incontinence Knowledge Quiz-Incontinence
PIKQ-POP	Prolapse and Incontinence Knowledge Quiz-Pelvic Organ Prolapse
PISQ	Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire
POP	Pelvic Organ Prolapse
POP (index)	Index measuring symptoms of Domain POP
POPDI	Pelvic Organ Prolapse Distress Inventory
POPDI (index)	Index measuring symptoms of POP as collected on the PFDI-20
POPIQ	Pelvic Organ Prolapse Impact Questionnaire
POPIQ (index)	Index measuring the QoL related to POP as collected on the PFIQ-7
P-QOL	Prolapse Quality of Life
QoL	Quality of Life
Question	As it appears in a questionnaire
SEXUAL (index)	Index measuring symptoms of Domain Sexual Dysfunction
SSRI's	Selective Serotonin Reuptake Inhibitors
SUI	Stress Urinary Incontinence
SUI (index)	Index measuring symptoms of stress urinary incontinence
Tool	A pre-established set of items measuring an aspect of Pelvic Floor Health
TVT	Tension-free Vaginal Tape
UDI	Urinary Distress Inventory
UDI (index)	Index measuring bladder dysfunction as collected on the PFDI-20
UI	Urinary Incontinence
UI (index)	Index measuring symptoms of urinary incontinence (SUI + UUI)
UIQ	Urinary Impact Questionnaire
UIQ (index)	Index measuring QoL related to bladder dysfunction as collected on the PFIQ-7
UrnFreq (index)	Index measuring symptoms of urinary frequency
UUI	Urinary Urgency Incontinence
UUI (index)	Index measuring symptoms of urgency urinary incontinence
Variable	A quantitative measure of a condition that may take different values; can be an item or Index

Appendix 2a. Pelvic Floor Distress Inventory-Short Form (PFDI-20) (136)

Pelvic Floor Distress Inventory – Short Form 20

INSTRUCTIONS

Please answer all of the questions in the following survey. These questions will ask you if you have certain bowel, bladder or pelvic symptoms and if you do how much they bother you. Answer these questions by putting a **X** in the appropriate box or boxes. If you are unsure about how to answer a question, give the best answer you can. While answering these questions, please consider your symptoms over the **last 3 months.**

EXAMPLE

For the following question:

If you do not usually have headaches just put an **X** in the 'No' box

Do you usually experience *headaches*?

X No; Yes **If yes, how much does this bother you?**

1 Not at All - **2** Somewhat - **3** Moderately - **4** Quite a bit

If you do usually have headaches, put an X in the 'Yes' box and indicate how much the headaches bother you. (In this example, the headaches were *moderately* bothersome)

Do you usually experience *headaches*?

No; X Yes **If yes, how much does this bother you?**

1 Not at All - **2** Somewhat - X**3** Moderately - **4** Quite a bit

Name:_____Date: _____/_____/_____

1. Do you usually experience *pressure* in the lower abdomen?

No; Yes
0

If yes, how much does this bother you?

1		**2**		**3**		**4**
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

2. Do you usually experience *heaviness or dullness* in the pelvic area?

No; Yes
0

If yes, how much does this bother you?

1		**2**		**3**		**4**
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

3. Do you usually have a bulge or something falling out that you can see or feel in the vaginal area?

No; Yes
0

If yes, how much does this bother you?

1		**2**		**3**		**4**
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

4. Do you usually have to push on the vagina or around the rectum to have or complete a bowel movement?

No; Yes
0

If yes, how much does this bother you?

1		**2**		**3**		**4**
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

5. Do you usually experience a feeling of incomplete bladder emptying?

No; Yes
0

If yes, how much does this bother you?

1		**2**		**3**		**4**
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

6. Do you ever have to push up on a bulge in the vaginal area with your fingers to start or complete urination?

No; Yes

0

If yes, how much does this bother you?

1	2	3	4
Not at All	Somewhat	Moderately	Quite a bit

---

7. Do you feel you need to strain too hard to have a bowel movement?

No; Yes

0

If yes, how much does this bother you?

1	2	3	4
Not at All	Somewhat	Moderately	Quite a bit

---

8. Do you feel you have not completely emptied your bowels at the end of a bowel movement?

No; Yes

0

If yes, how much does this bother you?

1	2	3	4
Not at All	Somewhat	Moderately	Quite a bit

---

9. Do you usually lose stool beyond your control if your stool is well formed?

No; Yes

0

If yes, how much does this bother you?

1	2	3	4
Not at All	Somewhat	Moderately	Quite a bit

---

10. Do you usually lose stool beyond your control if your stool is loose or liquid?

No; Yes

0

If yes, how much does this bother you?

1	2	3	4
Not at All	Somewhat	Moderately	Quite a bit

---

11. Do you usually lose gas from the rectum beyond your control?

No; Yes

0

If yes, how much does this bother you?

1	2	3	4
Not at All	Somewhat	Moderately	Quite a bit

12. Do you usually have pain when you pass your stool?

No; Yes

0

If yes, how much does this bother you?

1		**2**		**3**		**4**
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

---

13. Do you experience a strong sense of urgency and have to rush to the bathroom to have a bowel movement?

No; Yes

0

If yes, how much does this bother you?

1		**2**		**3**		**4**
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

---

14. Does a part of your bowel ever pass through the rectum and bulge outside during or after a bowel movement?

No; Yes

0

If yes, how much does this bother you?

1		**2**		**3**		**4**
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

---

15. Do you usually experience frequent urination?

No; Yes

0

If yes, how much does this bother you?

1		**2**		**3**		**4**
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

---

16. Do you usually experience urine leakage associated with a feeling of urgency; that is, a strong sensation of needing to go to the bathroom?

No; Yes

0

If yes, how much does this bother you?

1		**2**		**3**		**4**
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

---

17. Do you usually experience urine leakage related to coughing, sneezing, or laughing?

No; Yes

0

If yes, how much does this bother you?

1		**2**		**3**		**4**
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

18. Do you usually experience small amounts of urine leakage (that is, drops)?

No; Yes

0

If yes, how much does this bother you?

1		2		3		4
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

---

19. Do you usually experience difficulty emptying your bladder?

No; Yes

0

If yes, how much does this bother you?

1		2		3		4
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

---

20. Do you usually experience *pain* or *discomfort* in the lower abdomen or genital region?

No; Yes

0

If yes, how much does this bother you?

1		2		3		4
Not at All	-	Somewhat	-	Moderately	-	Quite a bit

Thank you for taking the time to complete this questionnaire

Appendix 2b. Pelvic Floor Impact Questionnaire-Short Form (PFIQ-7) (136)

Pelvic Floor Impact Questionnaire – short form 7

Instructions: Some women find that bladder, bowel or vaginal symptoms affect their activities, relationships, and feelings. For each question, place an **X** in the response that best describes how much your activities, relationships or feelings have been affected by your bladder, bowel or vaginal symptoms or conditions **over the last 3 months**. Please be sure to mark an answer in **all 3 columns** for each question. Thank you for your cooperation.

How do symptoms or conditions related to the following →→→→ usually affect your ↓	*Bladder or urine*	*Bowel or rectum*	*Vagina or Pelvis*
1. ability to do household chores (cooking, housecleaning, laundry)?	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit
2. ability to do physical activities such as walking, swimming, or other exercise?	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit
3. entertainment activities such as going to a movie or concert?	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit
4. ability to travel by car or bus for a distance greater than 30 minutes away from home?	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit
5. participating in social activities outside your home?	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit
6. emotional health (nervousness, depression, etc.)?	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit
7. feeling frustrated?	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit	☐ Not at all ☐ Somewhat ☐ Moderately ☐ Quite a bit

Appendix 3a. Prolapse and Incontinence Knowledge Quiz (PIKQ)-Incontinence (139)

Below are some statements about urinary incontinence (loss of urine or leaky bladder). Please state if you agree or disagree with each statement, or if you do not know.

1. Urinary incontinence (loss of urine or leaky bladder) is more common in young women than in old women.

   AGREE **DISAGREE** DON'T KNOW

2. Women are more likely than men to leak urine.

   AGREE DISAGREE DON'T KNOW

3. Other than pads and diapers, not much can be done to treat leakage of urine.

   AGREE **DISAGREE** DON'T KNOW

4. It is NOT important to diagnose the type of urine leakage before trying to treat it.

   AGREE **DISAGREE** DON'T KNOW

5. Many things can cause urine leakage.

   AGREE DISAGREE DON'T KNOW

6. Certain exercises can be done to help to control urine leakage.

   AGREE DISAGREE DON'T KNOW

7. Some medications may cause urinary leakage.

   AGREE DISAGREE DON'T KNOW

8. Once people start to leak urine, they are never able to control their urine again.

   AGREE **DISAGREE** DON'T KNOW

9. Doctors can do special types of bladder testing to diagnose urine leakage

   AGREE DISAGREE DON'T KNOW

10. Surgery is the only treatment for urinary leakage.

    AGREE **DISAGREE** DON'T KNOW

11. Giving birth many times may lead to urine leakage.

    AGREE DISAGREE DON'T KNOW

12. Most people who leak urine can be cured or improved with some kind of treatment.

    AGREE DISAGREE DON'T KNOW

Appendix 3b. Prolapse and Incontinence Knowledge Quiz (PIKQ)–POP (139)

Below are some statements about pelvic organ prolapse (bulging of the vagina, uterus, bladder, or rectum). Please state if you agree or disagree with each statement, or if you do not know.

1. Pelvic organ prolapse (bulging of the vagina, uterus, bladder, or rectum) is more common in young women than in old women.

   AGREE **DISAGREE** DON'T KNOW

2. Giving birth many times may lead to pelvic organ prolapse.

   AGREE DISAGREE DON'T KNOW

3. Pelvic organ prolapse can happen at any age.

   AGREE DISAGREE DON'T KNOW

4. Certain exercises can help to stop pelvic organ prolapse from getting worse.

   AGREE DISAGREE DON'T KNOW

5. Symptoms of pelvic organ prolapse may include pelvic heaviness and/or pressure.

   AGREE DISAGREE DON'T KNOW

6. A good way for a doctor to diagnose pelvic organ prolapse is by examining the patient.

   AGREE DISAGREE DON'T KNOW

7. Once a patient has pelvic organ prolapse, not much can be done to help her.

   AGREE **DISAGREE** DON'T KNOW

8. Heavy lifting on a daily basis can lead to pelvic organ prolapse.

   AGREE DISAGREE DON'T KNOW

9. Surgery is one type of treatment for pelvic organ prolapse.

   AGREE DISAGREE DON'T KNOW

10. Doctors can run a blood test to diagnose pelvic organ prolapse.

    AGREE **DISAGREE** DON'T KNOW

11. A rubber ring called a pessary can be used to treat symptoms of pelvic organ prolapse.

    AGREE DISAGREE DON'T KNOW

12. People who are obese are less likely to get pelvic organ prolapse.

    AGREE **DISAGREE** DON'T KNOW

Appendix 4. Participant Recruitment Advertisement

VOLUNTEERS REQUIRED FOR RESEARCH ON WOMEN'S HEALTH EDUCATION

Volunteers are required for a research study to be conducted through the School of Medical Rehabilitation. We are looking for female individuals willing to complete 3 online surveys (5 to 10 minutes each).

This study is being conducted to evaluate the awareness of a common women's health issue.

Participants may be asked to attend one or two education sessions offered during your lunch break at Manitoba Hydro (during the Brown Bag Education Sessions).

Interested volunteers please contact:

Kelli Berzuk	**Or**	**Dr. Barbara Shay**
PhD Candidate		**Associate Professor**
School of Medical Rehab		**School of Medical Rehab**

Appendix 5. E-mail Survey Participation Invitations

Research Study: Pelvic Floor Awareness: Online Survey 1 of 3

Hello,

Thank you for agreeing to participate in this research study. Your volunteerism is much appreciated and will help those suffering with pelvic floor dysfunction, as well as work toward the prevention of pelvic floor dysfunction in others.
By participating in the survey, you are consenting to having your responses used by the University of Manitoba. For complete details of consent, please find attached the official University of Manitoba Consent Form for your records.

You will receive 3 online surveys for your completion and each will take approximately 5-10 minutes. The questions are sensitive in nature so please do your best to answer them as honestly as possible and be assured that your answers will be kept confidential. To protect your privacy, no names will be used and the first question will ask you to input a 4-digit code.

Your code is: T002

Please click on the link below to begin.
http://www.surveymonkey.com/s/6V77S7G

If the hyperlink does not work please cut and paste the whole URL address into your browser. If you have difficulties entering this survey, or have any questions, please send me a reply to this e-mail or feel free to contact me at:

Kelli Berzuk BA, BMR-PT, MSc
PGCertPhysio (Continence &Pelvic Floor Rehab)-Uni Melb
Clinic owner/physiotherapist

IPPC--Incontinence & Pelvic Pain Clinic
Nova Physiotherapy & Sports Fitness Clinic
Nova Physiotherapy Women's Health Centre
714 Medical Arts Building
233 Kennedy Street
Winnipeg, Manitoba, Canada
R3C 3J5

Phone: 204.982.9178
Fax: 204.982.9198
E-mail: kelliberzuk@shaw.ca
Web Site: www.ilaughedsohard.com

Research Study: Pelvic Floor Awareness: Online Survey 2 of 3

Hello,

Thank you for your participation in this research study. Your volunteerism is much appreciated and will help those suffering with pelvic floor dysfunction, as well as work toward the prevention of pelvic floor dysfunction in others.

This is the second of 3 online surveys for your completion and will take approximately 5-10 minutes. As with the first survey, the questions are sensitive in nature so please do your best to answer them as honestly as possible and be assured that your answers will be kept confidential. To protect your privacy, no names will be used and the first question will ask you to input a 4-digit code.

Your code is: T002

Please click on the link below to begin.

http://www.surveymonkey.com/s/BBSGHWV

If the hyperlink does not work please cut and paste the whole URL address into your browser. If you have difficulties entering this survey, or have any questions, please send me a reply to this e-mail or feel free to contact me at:

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PGCertPhysio (Continence &Pelvic Floor Rehab)-Uni Melb
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Winnipeg, Manitoba, Canada
R3C 3J5

Phone: 204.982.9178
Fax: 204.982.9198
E-mail: kelliberzuk@shaw.ca
Web Site: www.ilaughedsohard.com

Research Study: Pelvic Floor Awareness: Online Survey 3 of 3

Hello,

Thank you for your participation in this research study. Your volunteerism is much appreciated and will help those suffering with pelvic floor dysfunction, as well as work toward the prevention of pelvic floor dysfunction in others.

This is the third and final of 3 online surveys for your completion and will take approximately 5-10 minutes. As with the previous surveys, the questions are sensitive in nature so please do your best to answer them as honestly as possible and be assured that your answers will be kept confidential. To protect your privacy, no names will be used and the first question will ask you to input a 4-digit code.

Your code is: T002

Please click on the link below to begin.

http://www.surveymonkey.com/s/BBWR8M5

If the hyperlink does not work please cut and paste the whole URL address into your browser. If you have difficulties entering this survey, or have any questions, please send me a reply to this e-mail or feel free to contact me at:

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Fax: 204.982.9198
E-mail: kelliberzuk@shaw.ca
Web Site: www.ilaughedsohard.com

Appendix 6. Official Participant Consent Form

RESEARCH PARTICIPANT INFORMATION AND CONSENT FORM

Title of Study: Evaluation of Increasing Awareness on Pelvic Floor Muscle (PFM) Function on Pelvic Floor Dysfunction (PFD).
Principal Investigator: Dr. Barbara Shay, University of Manitoba
Co-Investigator: Kelli Berzuk, 714 Medical Arts Building, 233 Kennedy Street, Winnipeg, MB, R3C 3J5
You are being asked to participate in a research study. Please take your time to review this consent form and discuss any questions you may have with the study staff. You may take your time to make your decision about participating in this study and you may discuss it with your friends, family or (if applicable) your doctor before you make your decision. This consent form may contain words that you do not understand. Please ask the study staff to explain any words or information that you do not clearly understand.

Purpose of Study

This research study is being conducted to evaluate the effects of education and increasing awareness on pelvic floor muscle (PFM) function. While the prevalence of pelvic floor dysfunction (PFD) is amazingly high, affecting many millions of Canadian women in differing ways, most people have never heard of this muscle and therefore do not have the knowledge to prevent or correct these disorders.

A minimum total of 141 participants will be involved in this study. All willing volunteers will be included, provided they meet the inclusion criteria.

Study procedures:

In this study, you will be "randomized" into one of 3 study groups described below. "Randomized" means that you are put into a group by chance, like flipping a coin. You will have an equal, one in three, chance of being placed in any group. Volunteers will be placed into Groups A, B or C according to a computer-generated, random numbers strategy. As participants agree to be part of the study, they will be allocated to a group pre-determined by computer software to avoid any chance of bias during group selection.

This study is based on the following procedures:

All participants (Groups A, B and C) will be asked to complete a confidential, online questionnaire on three separate occasions. Each of the three online surveys will take approximately 5 to 10 minutes to complete and will be sent to the e-mail address provided by participants on the last page of this consent form. Participants are asked to complete the survey promptly, within 48-hours of receipt of the e-mail.

Following the completion of the first online survey, Groups A and B will be asked to attend a 60-minute education presentation on the importance of a healthy PFM, provided over a lunch break. Group C will be considered the control group and will not receive this education session. Following the presentation, the same questionnaire will be e-mailed to all participants for a second online completion.

Two months following the education presentation, participants allocated to Group A only, will be asked to attend a second education session, 45-60 minutes in length and this will again take place over a lunch break.

Following the second education session, all participants will be e-mailed the third and final online survey questionnaire for completion. Following this, the participant's commitment to the study will be fulfilled and we sincerely thank everyone for their time and effort. For those wanting to know the outcome of the research study, or for participants in Group C, the control group, who did not receive the education presentation, a follow-up session for education and results, will be offered once the data has been analyzed and documented.

Participation in the study will be for approximately 3 months in total.

The researcher may decide to remove individuals from this study if they fail to complete the online surveys in a timely fashion.

Individuals may, however, stop participating at any time. They are encouraged to speak with study staff prior to withdrawing from the study.

Risks and Discomforts

While there are no serious risks or physical dangers involved in this research study, we recognize that the survey questions are personal in nature and for some individuals it may be difficult to reveal your answers. Please be assured that your answers will be treated with the highest of respect and personal privacy maintained at all times. Your candid openness and truthfulness in answering the questions will be necessary for the accuracy of this research study.

Benefits

There may or may not be direct benefit to you from participating in this study. We hope the information gleaned from this study will benefit those people with pelvic floor problems and work toward the prevention of PFD in the future.

Costs

All the procedures, which will be performed as part of this study, are provided at no cost to you.

Payment for participation

You will receive no payment or reimbursement for any expenses related to taking part in this study.

Confidentiality

Information gathered in this research study may be published or presented in public forums, however your name and other identifying information will not be used or revealed. Despite efforts to keep your personal information confidential, absolute confidentiality cannot be guaranteed. Your personal information may be disclosed if required by law. You will note that your name is not included on the questionnaires but rather your information will be tracked by case number. All study related documents will bear only your assigned study number. Questionnaires will be copied and processed for statistical analysis through the Biostatistics Department at the University of Manitoba. Data may be physically mailed as well as entered into the computer and transmitted electronically between sites. Again, to provide confidentiality no names will be placed on documentation.

The University of Manitoba Health Research Ethics Board may review records related to the study for quality assurance purposes.

All records will be kept in a locked secure area and only those persons identified will have access to these records. No information revealing any personal information such as your name, address or telephone number will be collected on the questionnaire.

Voluntary Participation/Withdrawal from the Study

Your decision to take part in this study is voluntary. You may refuse to participate or you may withdraw from the study at any time. If the study staff feels that it is in your best interest to withdraw you from the study, they will remove you without your consent. We will tell you about any new information that may affect your health, welfare, or willingness to stay in this study.

Questions

You are free to ask any questions that you may have about the survey questions and your rights as a research participant. If any questions come up during or after the study contact the study physiotherapist: Kelli Berzuk at (204)982.9178 or the principal investigator, Dr. Barbara Shay at (204)787.2756.

For questions about your rights as a research participant, you may contact The University of Manitoba, Bannatyne Campus Research Ethics Board Office at (204) 789-3389.

Do not sign this consent form unless you have had a chance to ask questions and have received satisfactory answers to all of your questions.

Statement of Consent

I have read this consent form. I have had the opportunity to discuss this research study with Kelli Berzuk or her study staff. I have had my questions answered by them in language I understand. The risks and benefits have been explained to me. I believe that I have not been unduly influenced by any study team member to participate in the research study by any statements or implied statements. Any relationship (such as employer, supervisor or family member) I may have with the study team has not affected my decision to participate. I understand that I may print a copy of this consent form if I so choose. I understand that my participation in this study is voluntary and that I may choose to withdraw at any time. I freely agree to participate in this research study.

I understand that information regarding my personal identity will be kept confidential, but that confidentiality is not guaranteed. By signing this consent form, I have not waived any of the legal rights that I have as a participant in a research study.

Participant signature_____Date_____
(day/month/year)

Participant printed name: _____

I, the undersigned, have fully explained the relevant details of this research study to the participant named above and believe that the participant has understood and has knowingly given her consent

Printed Name: _____Date _____
(day/month/year)

Signature: _____

Role in the study: research co-investigator/research assistant
Relationship (if any) to study team members: **_____**

PARTICIPANT'S E-MAIL ADDRESS (ONLINE SURVEYS WILL BE SENT TO THIS E-MAIL ADDRESS): _____@_____

Appendix 7. Survey Monkey Online Survey 1 of 3

1. Evaluation of Increasing Awareness on Pelvic Floor Muscle (PFM) Function on...

Thank you for your interest in this research project.

We recognize that the questions in this survey are of a sensitive nature as they relate to bladder, bowel and sexual function, and therefore, may be difficult to answer. Please answer each question as honestly as possible and be assured that all of your responses are anonymous. Information gathered in this research study will be tracked by case number so that your name is never connected to your answers.

It should take LESS THAN 10 MINUTES to complete this survey and you will receive this survey on 3 separate occasions.

If you are ready to participate in the study, please enter your code number as found on your eMail (Example: A001) in the blank below and then click the NEXT button.

Code Number:

2. Consent Form

***Consent**

The official University of Manitoba Consent Form (sent as an email attachment) fully outlines the risks and benefits of this research study. I have not been unduly influenced by any study team member to participate in this survey. Since my participation in this survey is voluntary, I may choose to withdraw at any time. I understand that information regarding my personal identity will be kept confidential but as confidentiality cannot be guaranteed, information gathered in this research study will be tracked by case number to protect your privacy. Your name will never be connected to your answers.

◯ I consent to participate.

◯ I do not consent to participate.

3. Demographics

Please complete each question to best describe yourself.

***What is your age in years?**

- ◯ 18-29
- ◯ 30-39
- ◯ 40-49
- ◯ 50-59
- ◯ 60-69
- ◯ 70-79
- ◯ 80-89
- ◯ 90-99
- ◯ Over 99

***What is the highest level of education you have completed?**

- ◯ Less than High School
- ◯ High School Graduate
- ◯ Some College
- ◯ College Graduate
- ◯ Some University
- ◯ University Under-Graduate Degree
- ◯ University Graduate Degree

***What is your marital status?**

- ◯ Single, never married
- ◯ Married
- ◯ Separated
- ◯ Divorced
- ◯ Widowed

***What is your yearly household income?**

- ◯ Less than $29 999
- ◯ $30 000-$49 999
- ◯ $50 000-$69 999
- ◯ $70 000-$99 999
- ◯ More than $100 000
- ◯ Prefer to not answer

***What is your race/ethnicity?**

- ◯ Caucasian (not including Hispanic)
- ◯ Hispanic
- ◯ African American
- ◯ Asian
- ◯ Other (please specify)

***How would you rate your overall general health?**

- ◯ Very healthy
- ◯ Average health
- ◯ Poor health

***How many times have you been pregnant?**

- ◯ 0
- ◯ 1
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5 or more

***How many vaginal deliveries have you had?**

- ◯ 0
- ◯ 1
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5 or more

How many cesarean sections have you had?

- ◯ 0
- ◯ 1
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5 or more

During your birthing experience(s), which of the following interventions have you had (please check all that apply)?

- ☐ Epidural
- ☐ Episiotomy
- ☐ Perineal tear
- ☐ Vacuum extraction
- ☐ Forceps extraction
- ☐ None of the above

Which best describes your menstrual status?

- ◯ I have periods regularly
- ◯ I have periods irregularly
- ◯ I am currently pregnant
- ◯ I am near menopause
- ◯ I am menopausal

4. Pelvic Floor Muscle Strengthening Exercises

***Do you have any pelvic floor dysfunction?**

- ◯ Yes
- ◯ No
- ◯ I don't know

***Do you know what pelvic floor muscle exercises (also known as "Kegels") are?**

- ◯ Yes
- ◯ No
- ◯ I think so

***Do you do pelvic floor muscle exercises ("Kegels")?**

- ◯ Regularly
- ◯ Often
- ◯ Sometimes
- ◯ Rarely
- ◯ Never

***Do you think doing pelvic floor exercise ("Kegels") regularly is important for your health?**

- ◯ Very important
- ◯ Moderately important
- ◯ Somewhat important
- ◯ Not important
- ◯ Never thought about it

5. Urinary Incontinence & Pelvic Organ Prolapse Awareness

***Below are some statements about urinary incontinence (loss or leaky bladder). Please state if you agree or disagree with each statement, or if you do not know.**

For this study, it is important to AVOID GUESSING at a response. IF YOU ARE UNSURE of the answer, PLEASE SELECT the "DON'T KNOW" option.

	Agree	Disagree	Don't Know
1. Urinary incontinence (loss of urine or leaky bladder) is more common in young women than in old women.	○	○	○
2. Women are more likely than men to leak urine.	○	○	○
3. Other than pads and diapers, not much can be done to treat leakage of urine.	○	○	○
4. It is NOT important to diagnose the type of urine leakage before trying to treat it.	○	○	○
5. Many things can cause urine leakage.	○	○	○
6. Certain exercises can be done to help to control urine leakage.	○	○	○
7. Some medications may cause urinary leakage.	○	○	○
8. Once people start to leak urine, they are never able to control their urine again.	○	○	○
9. Doctors can do special types of bladder testing to diagnose urine leakage.	○	○	○
10. Surgery is the only treatment for urinary leakage.	○	○	○
11. Giving birth many times may lead to urine leakage.	○	○	○
12. Most people who leak urine can be cured or improved with some kind of treatment.	○	○	○

***Below are some statements about pelvic organ prolapse (bulging of the vagina, uterus, bladder, or rectum). Please state if you agree or disagree with each statement, or if you do not know.**

As in the previous section, it is important to AVOID GUESSING at a response. IF YOU ARE UNSURE of the answer, PLEASE SELECT the "DON'T KNOW" option.

	Agree	Disagree	Don't Know
1. Pelvic organ prolapse (bulging of the vagina, uterus, bladder, or rectum) is more common in young women than in old women.	○	○	○
2. Giving birth many times may lead to pelvic organ prolapse.	○	○	○
3. Pelvic organ prolapse can happen at any age.	○	○	○
4. Certain exercises can help to stop pelvic organ prolapse from getting worse.	○	○	○
5. Symptoms of pelvic organ prolapse may include pelvic heaviness and/or pressure.	○	○	○
6. A good way for a doctor to diagnose pelvic organ prolapse is by examining the patient.	○	○	○
7. Once a patient has pelvic organ prolapse, not much can be done to help her.	○	○	○
8. Heavy lifting on a daily basis can lead to pelvic organ prolapse.	○	○	○
9. Surgery is one type of treatment for pelvic organ prolapse.	○	○	○
10. Doctors can run a blood test to diagnose pelvic organ prolapse.	○	○	○
11. A rubber ring called a pessary can be used to treat symptoms of pelvic organ prolapse.	○	○	○
12. People who are obese are less likely to get pelvic organ prolapse.	○	○	○

6. Pelvic Floor Distress Inventory (PFDI-20)

Please answer all of the following 20 questions. These questions will ask you if you have certain bowel, bladder or pelvic symptoms and if you do how much they bother you. If you are unsure about how to answer a question, give the best answer you can. While answering these questions, please consider your symptoms over the LAST 3 MONTHS.

Example:

DO YOU USUALLY EXPERIENCE HEADACHES?

If you DO NOT usually have headaches, select 'No' and move to the next question. If you DO usually have headaches, select the 'Yes' option and indicate how much the headaches bother you i.e. 'Not at all', 'Somewhat', 'Moderately' or 'Quite a bit'.

1. Do you usually experience PRESSURE in the lower abdomen?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

2. Do you usually experience HEAVINESS or DULLNESS in the pelvic area?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

3. Do you usually have a bulge or something falling out that you can see or feel in the vaginal area?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

4. Do you usually have to push on the vagina or around the rectum to have or complete a bowel movement?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

5. Do you usually experience a feeling of incomplete bladder emptying?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

6. Do you ever have to push up on a bulge in the vaginal area with your fingers to start or complete urination?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

7. Do you feel you need to strain too hard to have a bowel movement?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

8. Do you feel you have not completely emptied your bowels at the end of a bowel movement?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

9. Do you usually lose stool beyond your control if your stool is well formed?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

10. Do you usually lose stool beyond your control if your stool is loose or liquid?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

11. Do you usually lose gas from the rectum beyond your control?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

12. Do you usually have pain when you pass your stool?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

13. Do you experience a strong sense of urgency and have to rush to the bathroom to have a bowel movement?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

14. Does a part of your bowel ever pass through the rectum and bulge outside during or after a bowel movement?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

15. Do you usually experience frequent urination?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

16. Do you usually experience urine leakage associated with a feeling of urgency; that is, a strong sensation of needing to go to the bathroom?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

17. Do you usually experience urine leakage related to coughing, sneezing, or laughing?

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

18. Do you usually experience small amounts of urine leakage (that is, drops)?

◯ No (0)

◯ Yes

If Yes:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

***19. Do you usually experience difficulty emptying your bladder?**

◯ No (0)

◯ Yes

If Yes:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

***20. Do you usually experience PAIN or DISCOMFORT in the lower abdomen or genital region?**

◯ No (0)

◯ Yes

If Yes:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

***21. Do you have pain with sexual intercourse?**

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

***22. Have you noticed that your interest in sex has decreased?**

◯ No (0)

◯ Yes

IF YES:

	Not at all (1)	Somewhat (2)	Moderately (3)	Quite a bit (4)
How much does this bother you?	◯	◯	◯	◯

7. Pelvic Floor Impact Questionnaire (PFIQ)

Some women find that bladder, bowel or vaginal symptoms affect their activities, relationships, and feelings. For each question, select the response that best describes how much your activities, relationships or feelings have been affected by your bladder, bowel or vaginal symptoms or conditions OVER THE LAST 3 MONTHS. Please be sure to select an answer in ALL 3 COLUMNS for each question. Thank you for your cooperation.

How do symptoms or conditions related to the topics along the top (bladder or urine, bowel or rectum, vagina or pelvis) usually affect the following seven statements?

	Bladder or urine	Bowel or rectum	Vagina or Pelvis
1. Ability to do household chores (cooking, housecleaning, laundry)?			
2. Ability to do physical activities such as walking, swimming, or other exercise?			
3. Entertainment activities such as going to a movie or concert?			
4. Ability to travel by car or bus for a distance greater than 30 minutes away from your home?			
5.Participating in social activities outside your home?			
6. Emotional health (nervousness, depression, etc.)?			
7. Feeling frustrated?			

8. Survey completed!

Thank you very much for your responses and for volunteering your time for this research study.

You have now completed the first of 3 surveys. The remaining 2 surveys will be eMailed to you over the next 2 months.

Again, thank you, as this research would not be possible without your participation.