Changes in Healthy Eating Knowledge and Attitudes of Caregivers Attending a Family-Based Pediatric Obesity Program

by

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ABSTRACT

Background: Pediatric obesity is a serious health issue, with an exceedingly high prevalence, having both short and long-term consequences. The Family Lifestyle Program (FLP) provides treatment services to families struggling with pediatric overweight and obesity living in the Winnipeg Health Region.

Purpose: To determine whether caregivers' nutrition knowledge and/or their attitudes about nutrition change as a result of attending the family group education sessions of the FLP.

Methods: In this quantitative exploratory research, 17 caregivers (68% female) attended at least four out of five family group education sessions and completed a self-administered survey over three time periods of the program intervention, spanning approximately eight weeks from Time 1 to Time 3.

Results: Caregiver nutrition knowledge did not change. Significant changes in three of the four attitude measures across three time periods were observed, related to caregiver attitudes toward their child's and their own eating habits, program specific nutrition content (label reading and meal planning), and the perceived effort in providing foods to family and in role modelling of healthy behaviours to family members.

Conclusions: The family group education sessions assisted the caregivers apply nutrition knowledge through participation in the program intervention, to improve their confidence with following healthy eating principles and role modelling these behaviours to their family members.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

ADA	American Dietetics Association
ANOVA	Analysis of variance
CP	Cerebral palsy
ENREB	Education/Nursing Research Ethics Board
FLP	Family Lifestyles Program
FRAMES	the acronymn identifying MI principles: Feedback, Responsibility, Advice, Menu, Empathy, and Self-efficacy
FTE	Full-Time Equivalent
FWMC	Family Weight Management Clinic
IDNT	International Dietetic & Nutrition Terminology
LC/C	Lifestyle Coach/Counselling
MI	Motivational Interviewing
n. d.	No Date
NFS	Nutrition and Food Services
RD	Registered Dietitian
RRC	Research Review Committee
PT	Physiotherapist
SPSS	Statistical Package for the Social Sciences
TTM	Transtheoretical Model of Behaviour Change
WHR	Winnipeg Health Region
WRHA	Winnipeg Regional Health Authority

CHAPTER 1

INTRODUCTION

One in four Canadian children between the ages of two and 17 were classified as being overweight in 2004, according to the Canadian Community Health Survey (Shields, 2005). The prevalence of obesity among children, 10% and nine percent for boys and girls respectively, has risen significantly since the early 1990s, from two percent each (Lau et al., 2007). The population of children in Manitoba between the ages of five and 19 years was 240 900 in 2006 (Statistics Canada, 2009). Considering these statistics suggests a prevalence of overweight in this population affecting 60 225 children and the prevalence of obesity affecting 22 913 children. On a local level, one quarter of the 120 270 (Statistics Canada, 2009) children between 5 and 19 years living in Winnipeg in 2006 suggests an estimated 30 067 would be classified as overweight and 11 437 classified as obese.

In September 2005, the Family Lifestyles Program (FLP) was created by Nutrition and Food Services (NFS) of the Winnipeg Regional Health Authority (WRHA) to address the growing number of referrals being received from pediatricians and family physicians within the Winnipeg Health Region (WHR) seeking services for their overweight and obese clients. The purpose of this program was to work with the families of these children to establish and engage in healthy eating and regular physical activity behaviours.

Although some formative/process evaluations have taken place with the program over the years to help direct program content and assess participant

satisfaction, no summative/outcome evaluation has been completed. The benefits of conducting a summative evaluation include quality assurance/improvement at the program level, but can be much farther reaching provincially, nationally and even internationally. The data collected, when considered with other pediatric obesity program evaluation data, may provide evidence as to the education strategies that may or may not lead to positive changes in knowledge and attitudes of its participants, which therefore may impact changes being made and maintained related to healthy lifestyles. Programs worldwide can benefit from learning of successful education strategies, which could potentially be applied to both treatment and prevention of pediatric overweight and obesity. One outcome of program evaluation would be an expansion to the program, both in numbers of families reached, but also to incorporate principles of population health approaches and the addition of other multi-disciplinary health and social services personnel, to focus not only on treatment of overweight and obesity, but on primary prevention, which would impact the health of Winnipeggers and Manitobans alike.

Objective

The objective of this study is to determine whether caregivers' nutrition knowledge and/or their attitudes about nutrition change as a result of attending the group education sessions of the FLP.

Research Question

Does caregivers' nutrition knowledge increase and/or their attitudes about nutrition change after attending the family group education sessions of the FLP?

Summary

In this chapter, the importance of this study was presented. Further research to support the underlying principles guiding this project in a literature review is presented in Chapter 2. An overview of the methodology used in this study, including study design, participant recruitment, data collection techniques and statistical analysis is the subject of Chapter 3. Chapter 4 features the study results and Chapter 5 is concerned with a discussion of the results presented by summarizing the major research findings, as well as discussing the limitations of this study, and offering suggestions for future research and practice.

CHAPTER 2

LITERATURE REVIEW

This chapter introduces the seriousness of pediatric obesity, beginning with its prevalence, and its connection to the many health concerns that these children may face as their pediatric obesity transitions into adult obesity. The literature provides guidelines about the program design strategies that would be incorporated into pediatric obesity treatment programs and the educational strategies to be considered in program interventions. The importance of including parents in the treatment process is explored, followed by a comparison of several pediatric obesity programs offered throughout Canada, with a specific focus on the construction of the FLP, a local program in Winnipeg from which this study was designed.

Pediatric Obesity

Pediatric obesity is a serious chronic disease that is recognized as being both frustrating and difficult to treat (Barlow & Dietz, 1998). Addressing this problem has become a major public health concern in recent years due to its prevalence tripling in Canada from 1981-1996 (Tremblay & Willms, 2000) and the recognition that pediatric obesity frequently leads to adult obesity with all of its associated health risks (Wing & Polley, 2001; Barlow & Dietz, 1998). According to the 2006 Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity in Adults and Children, approximately one in 10 Canadian children are obese (defined as weight greater than the 95th percentile for age and gender) and an additional quarter of children are classified as overweight,

suggesting that the issue of pediatric obesity is not going away, and in fact, is projected to soar (Lau et al., 2007).

Several short and long-term adverse health outcomes have been found to be associated with childhood obesity, including body image distortion, low self-esteem and depression (Morgan, Tanofsky-Kraff, Wilfey, & Yanovski, 2002), non-alcoholic fatty liver disease (Mathur, Das, & Arora, 2007), as well as cardiovascular, gastrointestinal, pulmonary, and orthopedic complications (Bennett & Sothern, 2009). The probability of childhood obesity persisting into adulthood is estimated at 20% at four years of age to approximately 80% by adolescence (American Academy of Pediatrics, 2003). Childhood obesity has been identified as an early risk factor not only for adult obesity, but for adult morbidity and mortality as well. The health risks of obesity are enormous. The rapid increase in the prevalence of pediatric obesity has alarmed public health agencies, health care clinicians, health care researchers, and the general public (Barlow et al., 2007).

Treating Pediatric Obesity

Several commonalities and trends can be found within the literature among pediatric weight management program practices, the first of which being that family centered approaches improve long-term outcomes (Barlow & Dietz, 1998; Faith, Saelens, Wilfey & Allison, 2001; Jonides, Buschbacher, & Barlow, 2002; Batch & Baur, 2005). Second, interventions should focus on increasing a variety of healthy behaviours in areas such as nutrition, increased physical activity and decreased sedentary activities (Ritchie, Welk, Styne, Gerstein,, &

Crawford, 2005; Healthy Active Living Committee, Canadian Paediatric Society, 2002; Scottish Intercollegiate Guidelines Network, 2003). Third, a combination of behavioural approaches is the most effective approach to changing behaviours (Kirk, Scott, & Daniels, 2005; Epstein et al., 2001). And finally, regular contacts with health practitioners with regards to pediatric overweight/obesity will have greater impacts than single, less frequent contacts (Ontario Medical Association, 2005; Registered Nurses Association of Ontario, 2005). It would seem that these four concepts of i) using a family –centered approach, ii) focusing on healthy behaviours, iii) using a combination of behavioural approaches and, iv) offering regular contacts with the healthcare team would be important program design strategies to treat pediatric obesity.

Important recommendations are outlined in the Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity in Adults and Children (Lau et al., 2007) specific to pediatric programs, including, but not limited to suggesting that health care professionals assess readiness and barriers to change before an individual implements a healthy lifestyle plan for weight control or management, providing education and support in behaviour modification techniques as an adjunct to other interventions, and using comprehensive lifestyle interventions (combining behaviour modification techniques, cognitive behaviour therapy, activity enhancement and dietary counselling).

Educational Strategies

As behavioural modification techniques are central to any pediatric obesity program design, this next section will provide detail about techniques, or

educational strategies, used in nutrition counselling and pediatric obesity programs, specifically, the transtheoretical model of behaviour change (TTM), motivational interviewing (MI), goal setting, self-monitoring and problem solving.

Transtheoretical Model of Behaviour Change

One commonly used behavioural model among healthcare professionals is the TTM, also known as the Stages of Change, developed by Prochaska & DiClemente (1982). The Stages of Change model includes six stages that someone (hereafter referred to as the 'client' or 'he') can progress through, although not necessarily in a linear fashion, when making a change in behaviour. If the client is not even thinking about making a change, and is happy with the status quo, he is considered to be in the Precontemplation Stage (Prochaska, Norcross, & DiClemente, 1994). If he has started to consider a need for change at some point in the future, he is in the Contemplation Stage (Prochaska, Norcross, & DiClemente, 1994) and if he is ready to start making a plan to change a behaviour, he is in the Preparation Stage (Prochaska, Norcross, & DiClemente, 1994). If he is actively making a change, he is in the Action Stage (Prochaska, Norcross, & DiClemente, 1994), and if he has been in the Action Stage for more than six months, he is considered to be in the Maintenance Stage (Prochaska, Norcross, & DiClemente, 1994). The Termination Stage, mainly used with addictions (the model's original intent), does not necessarily apply well to changing food or physical activity behaviours. At any point, the client can recycle into a previous stage, and once in the Maintenance Stage, it is not uncommon to relapse and re-enter into one of the earlier stages.

The model suggests 10 stage-specific strategies (processes of change) that can be used to help one progress to another stage. These commonly used processes, and the respective stage in which they are most useful (based on empirical evidence), have been summarized well in a workbook geared to help frontline healthcare workers apply the principles of the TTM in their interactions with clients (Winnipeg Regional Health Authority, 2007), in affecting healthful behaviour change. The following paragraph explains these processes of change and the respective stages for which they are most useful, as outlined in the WRHA workbook (2007).

For the Precontemplation Stage, the processes of consciousness raising (learning new information to support a need for change) and emotional arousal (experiencing and expressing feelings that result in a movement towards a change) can be very useful. These processes, as well as self-reevaluation (realizing that the behavioural change is part of one's identity) and environmental reevaluation (realizing how the behaviour affects his home, work and the people in his life) are used in the Contemplation Stage. Self-liberation can be used for someone in the Preparation Stage, where the client chooses to commit to act, to believe that change is possible, and accepts responsibility for change, as can the processes of commitment (making a plan) and environmental control (creating, altering, or avoiding cues/stimuli that trigger or encourage a particular behaviour). For the Action or Maintenance stages there are several processes to be used in addition to the processes of commitment and environmental control already mentioned – countering (substituting a healthier alternative for the unwanted

behaviour), rewards (celebrating achievements) and helping relationships (seeking and using a strong support system of family, friends and co-workers). The process of social liberation, whereby society supports healthier behaviors, can be useful across all stages.

Decisional balance is a key aspect of the model as a person weighs the benefits and consequences of adopting a new behaviour at any stage (Prochaska, Norcross, & DiClemente, 1994). For example, for individuals in the Precontemplation or Contemplation Stages, the consequences of changing are much bigger than the benefits and therefore the change is not worth the effort. Hence, the use of the previously mentioned stage specific processes of change. Another key aspect of the model is self-efficacy - a person's perception as to how confident they are able to make a change (Prochaska, Norcross, & DiClemente, 1994). The confidence that one can try the behaviour change and sustain it is a crucial benefit that needs to outweigh the consequences. As mentioned, recycling and relapsing are built into this model, which recognizes that change is difficult and there will be a combination of factors which will lead us back to our old habits (Prochaska, Norcross, & DiClemente, 1994). The model does not view these events as failures, but has us learn from these situations to recognize the signs and symptoms of recycling and relapsing and to remove ourselves from social situations that do not support our behaviour change and/or deal with stress in other ways.

Despite widespread use of this model, there is limited evidence for the effectiveness of pediatric obesity interventions based on the TTM (Aveyard et al.,

2003; Bridle et al., 2005). These conclusions may have arisen from the lack of model specifications and poor application when studying the effectiveness of interventions based on the model, and not due to using the model itself. Several studies in the systematic review of Bridle et al. (2005) did not discuss specific processes used to relate to particular stages and used only the variable of 'stage' in their research design, without taking into consideration the aspects of processes of change, decisional balance and self-efficacy. In order to determine the effectiveness of interventions based on this model, it is important to fully understand the model and incorporate all aspects of the model into the design of the intervention. The model cannot yet be discredited until these aspects are further investigated, and perhaps could be most beneficial when used in conjunction with other behaviourally-based models.

The strategies suggested as being most useful during the early stages of change, which target motivation (consciousness raising, emotional arousal, environmental reevaluation, self-reevaluation and social liberation) are very consistent with the techniques used in the next strategy to be discussed, motivational interviewing.

Motivational Interviewing

The approach known as Motivational Interviewing (MI), created by Miller and Rollnick (2002) was originally developed for use in alcohol and addictions counselling. MI is a directive, client-centered counseling style for eliciting behaviour change by helping clients to explore and resolve ambivalence. This technique aims to increase intrinsic motivation while promoting resolve toward a

desired behaviour (VanWormer & Boucher, 2004). The approach is intended to be used as a brief intervention and is guided by six ingredients for change, identified by the acronym FRAMES: Feedback of personal risk or impairment; emphasis on personal Responsibility for change; clear Advice to change; a Menu of alternative change options; therapist Empathy; and facilitation of client Self-efficacy or optimism (Van Wormer & Boucher, 2004). These ingredients are to be delivered by the clinician using the principles of expressing empathy, developing discrepancy, avoiding argumentation, rolling with resistance and supporting self-efficacy. There is evidence that MI techniques may improve outcomes for individuals (adults) attempting weight loss and maintenance (DiMarco, Klein, Clark, & Wilson 2009; Smith et al., 1997; and Wilson & Schlam, 2004) and has been used with the pediatric population (Barlow et al., 2007). The Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report (Barlow et al., 2007) recognizes that since behaviour change requires sustained commitment by the client and family members, their motivation is the most important but most challenging aspect of obesity care. Although the efficacy and cost-effectiveness of MI for the prevention or treatment of pediatric obesity have not yet been clearly established, Resnicow, Davis, & Rollnick. (2006) suggest that evidence for the technique for other health issues, combined with the considerable research on client-centered communication can be sufficient to encourage food and nutrition professionals to consider obtaining training in MI and to begin incorporating these techniques into their practice

relating to pediatric overweight and obesity. Tyler & Horner (2008) described how incorporating the principles of MI into a family-centered collaborative negotiation model encourages parents and children to become active participants throughout the interaction, from identifying the behaviour to change, sharing of information, to making the plan for attaining the desired health outcome, several strategies outlined below.

Goal Setting

Goal setting is a commonly used strategy employed in behaviour modification interventions. This collaborative activity between the client and the practitioner in which the client decides from all potential lifestyle behaviour recommendations what changes he/she will make an effort to work towards. Goal setting involves the selection of modifiable behaviours that are to be targeted by interventions and selecting specific short- and long-term benchmarks by which progress will be evaluated (Sothern, Gordon, & von Almen, 2006). Ensuring the goals are realistic, achievable and short-term will promote the participant's self-efficacy and facilitate the accomplishment of long-term goals. Fitch & Bock (2009) identify several suggestions for evidenced-based lifestyle interventions that individuals and families should consider targeting with their initial goal setting. Their list of 10 lifestyle behaviours to target with goal setting include: i) eliminating sugar sweetened beverages, ii) increasing intake of water or skim milk, iii) eating a healthy breakfast daily, iv) packing a lunch for school as much as possible, v) eat at least five servings of fruits and vegetables daily, v) setting short-term, attainable goals for incremental changes, vii) eating family

meals together as much as possible, viii) limiting eating out at restaurants, particularly fast food, ix) choosing appropriate portion sizes, and x) encouraging the switch to skim milk and increase consumption of calcium (Fitch & Bock, 2009). Goals should be specific, realistic and attainable and individualized to the specific individual/family.

Self-monitoring

The technique of self-monitoring involves keeping a detailed record of the behaviour(s) one is trying to change, identified in the process of goal setting explained above. Having the participant keep track of his/her accomplishments can increase participant self-efficacy and lend itself to successful behaviour change (Butryn, Phelan, Hill, & Wing, 2007 and Rosser, Vowles, Keogh, Eccleston, & Mountain, 2009). Self-monitoring can be quite detailed to include what, when and how much is eaten or physical activities performed, or can be specific to one behaviour, such as trying to consume a certain number of servings from a specific food group or specific amount of time spent being physically active. Self monitoring can help identify patterns, assist with problem solving (explained below) and goal setting (explained above), and can help celebrate successes (American Dietetic Association [ADA], 2009).

Problem Solving

Problem solving involves techniques that are taught to assist clients in identifying barriers to achieving goals, identifying and implementing solutions and evaluating the effectiveness of the solutions. The practitioner works collaboratively with the client to define the problem, brainstorm solutions, weigh

the pros/cons of the potential solutions, select/implement the strategy, evaluate the outcomes, and adjust the strategy. This strategy is commonly used as part of the nutrition counselling component of the nutrition intervention presented by dietitians (ADA, 2009).

Applying these educational strategies, from incorporating aspects of the TTM and MI to the use of goal setting, self-monitoring and problem solving with clients, can be relevant not only when counselling clients on an individual basis, but also when working with the family unit, as outlined in the *Pocket Guide For International Dietetics & Nutrition Terminology (IDNT) Reference Manual: Standardized Language for the Nutrition Care Process* (ADA, 2009). This is important as it relates back to the previously mentioned third commonality among pediatric weight management program practices, using a combination of behavioural approaches is the most effective approach to changing behaviours (Kirk et al., 2005, Epstein, Roemmich, & Raynor, 2001), but also because the first commonality mentioned was the importance of programs being offered within a family-centered approach (Barlow & Dietz, 1998; Faith et al., 2001; Jonides et al., 2002; Batch & Baur, 2005). This next section will explore the importance of family involvement further.

Family Involvement

In a meta-analysis of comprehensive pediatric obesity treatment programs, Haddock, Shadish, Kleges, & Stein (1994) determined that increased focus of behavioural techniques, such as added emphasis on increasing physical activity or decreasing sedentary behaviour, expanded targets for behavioural

techniques, and increased parental involvement can bolster the efficacy of the comprehensive behavioural interventions. Gilles et al. (2008) performed a meta-analysis of 22 treatment groups found within 11 studies, which demonstrated that increasing parental involvement appears to lead to more favourable outcomes when completed in conjunction with behaviourally-based interventions. From a social-learning perspective, these results fit, in that parents influence eating and behaviour habits of their children through modelling and the provision of feedback and contingent responses (Plourde, 2006).

Several studies have shown the influence parents have on their children's intake (and other behaviors unrelated to food). From the kinds of foods kept routinely in the cupboard to those served regularly at the family table, and even those consumed away from home, Savage, Orlet-Fischer, & Birch (2007) recognize the critical role caregivers play in determining which kinds of foods will become familiar to their children. Scaglioni, Salvionni, & Gamlimberti (2008) provide several strategies aimed at parents, recognizing the important role they play as gatekeepers to the social influences surrounding children's eating, specifically the modelling of eating habits, positive or negative. The association of children's dietary beliefs and behaviours to that which is modelled by their parents has also been demonstrated by Lazarou, Kalavan, & Matalas, (2008), and the effect of this modelling over time and the negative consequences of such behaviour can be seen by Snoek, Engels, Janssens, & van Strien (2007), whereby a direct effect of parent's emotional eating could be seen on their adolescents' emotional eating.

Denman (2003) describes the family as the context where “health is learned, lived, experienced, and the niche where multiple members encounter and respond to disease and illness across the life course” (p.145). As the family provides the resources to support health and make decisions about what they believe to be health-promoting actions, and to effect real lifestyle change in at-risk children, it is imperative that family-based approaches be used.

Given this relationship between parents’ beliefs and behaviours surrounding eating to that of their children, targeting the parent’s knowledge and attitudes should have an impact on the children’s knowledge and attitudes about nutrition and healthy eating. A recent review of behavioural treatment techniques by Stewart, Reilly & Hughes (2008), demonstrated a connection between behaviour modification techniques and family involvement in their suggestion that parents not only need to be involved in their child’s treatment program, but initiation of the program should not occur until the parent(s) is(are) ready, willing and able to focus on making lifestyle changes.

When assessing parental knowledge and/or attitudes relating to a family-based education program, however, the literature is conflicting. When assessing the effect of family education on family participation in child rehabilitation for children with developmental disabilities, Wong, Lai, Martinson, & Wong (2006) found the mean scores for all variables increased after education, but not to a significant level. The study concluded that family-focused education had a therapeutic effect on parental competency and in turn enhanced their participation in child rehabilitation. In testing the impact of the Chicago Heart

Health Curriculum on pre-adolescent students and evaluating the efficacy of a parent-participation component in conjunction with the student curriculum, Petchers, Hirsch, & Bloch (1987) determined that the educational intervention clearly had an effect on knowledge, but did not have a consistent impact on attitudes or behavioural planning and expectations. Cullen et al (2009), studied the effects of a nutrition education program aimed at preventing childhood obesity, and determined that families participating in the program demonstrated improvements with parent food skills, increased environmental control over eating and self-efficacy to model fruit and vegetable consumption. As well, parents participating in the program showed a reduction in negative emotional and instrumental feeding practices and lowered parental perceptions of barriers to eating fruits and vegetables and low fat food.

After reviewing these educational strategies and exploring the benefit of including parents and children into the treatment process, it is necessary to determine how various established pediatric weight management programs across Canada are facilitated.

Pediatric Obesity Programs

The Canadian Obesity Network (n.d.) has conducted an environmental scan of pediatric weight management programs offered across Canada based on a voluntarily completed questionnaire from the staff of the various programs. This is not necessarily a complete listing of all pediatric programs nation wide, but does allow one to review similarities and differences in the program designs among programs targeting pediatric obesity in different geographic regions of the country

in terms of the ages and numbers served, types and styles of interventions, program staff, length of intervention and follow up, if readiness to change is assessed, and if the programs are involved in formal evaluation and/or research.

Table 1 shows 16 programs from the Canadian Obesity Network's environmental scan, representing two in British Columbia, three in Alberta, one in Manitoba, and three in Quebec. The programs are of varying sizes, with staffing levels ranging from 0.4 full time equivalent (FTE) individuals to l2 FTE workers supplying expertise as General Practitioners, Pediatricians, Registered Dietitians, Registered Nurses, Fitness Professionals, Counsellors/Social Workers/Child Youth Workers, Psychologists, Administrative Assistants, Case Managers, Researchers, Graduate Students, and Data Analysts.

The services provided by the individual programs vary significantly as would be expected when comparing programs of varying staffing levels and multi-disciplinary team members. One program offers their services in a group intervention format only; six programs offer strictly one-on-one interventions, and the remaining nine programs offer a combination of one-on-one and group interventions. Fourteen of the 16 programs list their style of intervention as 'Lifestyle coach/counselling' (LC/C). Six of these 14 programs also include structured exercise plans and energy reduced diets, as does one program that does not offer LC/C. Six programs offer pharmaceutical interventions and two include a surgical intervention in some cases. The number of participants serviced by these groups range from 25 to 3000 participants enrolled annually, with the length of the intervention extending from 1 week to 250 weeks with

follow up timeframes varying from 1 week to 260 weeks. The ages of the children and youth serviced by these programs differ as well. Some programs service pediatric clients from one, two or three to 18 years of age, some service only 12 or 13 – 18 years of age, while the remaining programs service a variety of age groups starting at five, six, eight or even 10 years of age up to and including 15, 16, 17 or 18 year old youth. All programs require parent participation.

When reviewing the information available for these individual programs, it appears that each program is incorporating principles of family involvement and educational strategies outlined by the literature as best practice and discussed previously. It is difficult from the limited information presented to know specifically how family members are included in the interventions and which specific behaviour modification techniques and strategies are used. However, it can be noted that all but four programs, 12 of the 16 measure readiness to change, suggesting the TTM is an organizing framework behind the programs.

The majority of the programs, 11 of the 16, are involved with research, but only five programs formally evaluate their weight management programs. Four weight management programs have planned a formal evaluation, but have not yet put it into practice; six programs do not formally evaluate their services, while one program did not enter a response on the questionnaire regarding formal evaluation.

Table 1 Canadian Pediatric Program Characteristics

Program	Ages Serviced	Annual Enroll-ment	Type & Style of Interv'n[a]	Interv'n Length (weeks)[b]	F/U Length (weeks)[c]	Team Members FTE[d]	Assess RTC[e]	Formally Evaluated	Research
Building Better Bodies for Teens (Scarborough)	13-18 years	40	1:1[f], G[g] LC/C[h], SEP[i], ERD[j], P[k]	8	52	1 P(MD)[l], 1RD[m], 1 RN[n]	Yes	Planned, but not yet performed	No
Centre for Healthy Weights (BC)	6-17 years	160	1:1[f], G[g] LC/C[h]	10	52	0.5 MD[o], 1.5 RD[m], 0.5 F[p], 1.5 P[q], 1 AA[r], 0.5 DA[s]	Yes	Yes	Yes
Centre for Healthy Weights – Shapedown North (BC)	6-16 years	40	G[g] LC/C[h]	10	52	0.5 MD[o], 0.5 RD[m], 0.5 F[p], 0.5 AA[r], 0.5 C[t]	Yes	Planned, not yet performed	Yes
Child & Teen Outpatient Clinic (North York)	1-18 years	3000	1:1[f], G[g] LC/C[h]	52	4	1.5 P(MD)[l], 1 RD[m], 1.5 AA[r], 1 R[u], 1 GS[v]	Yes	Yes	Yes

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Program	Ages Serviced	Annual Enroll-ment	Type & Style of Interv'n[a]	Interv'n Length (weeks)[b]	F/U Length (weeks)[c]	Team Members FTE[d]	Assess RTC[e]	Formally Evaluated	Research
Children's Exercise & Nutrition Centre (Hamilton)	1-18 years	360	1:1[f], G[g] LC/C[h], SEP[i], ERD[j]	52	52	1 MD[o], 1 RD[m], 1 AA[r], 1 DA[s], 3 R[u], 3 GS[v], 1CYW[t]	Yes	NR[w]	Yes
Children's Hospital of Eastern ON (Ottawa)	2-18 years	150	1:1[f] LC/C[h], P[k]	NR[w]	260	0.5 P(MD)[l], 0.5 RN[n], 2.5 R[u], 2 GS[v]	No	No	No
Clinique de Nutrition/ Consultation Pediatrique (Montreal)	1-18 years	250	1:1[f] LC/C[h], Other	250	250	1 P(MD)[l], 0.5 RD[m], 0.5 RN[n], 0.5 P[q], 0.5 AA[r], 0.5 SW[t]	Yes	Planned, but not yet performed	Yes
Comprehensive Overweight Management Program (Toronto)	12-18 years	50	1:1[f], G[g] LC/C[h], SEP[i], ERD[j], P[k], S[x]	24	52	2 P(MD)[l], 0.5 RD[m], 0.5 F[p], 1 RN[n], 1 P[q], 1 AA[r], 0.5 DA[s], 1 CM[y], 3 R[u], 1.5 GS[v]	No	Planned, but not yet performed	No

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Program	Ages Serviced	Annual Enroll-ment	Type & Style of Interv'n[a]	Interv'n Length (weeks)[b]	F/U Length (weeks)[c]	Team Members FTE[d]	Assess RTC[e]	Formally Evaluated	Research
Family Lifestyles Program (Winnipeg)	8-15 years	30	1:1[f], G[g] LC/C[h]	8	NR[w]	0.3 RD[m], 0.1 F[p]	No	No	No
Family Weight Management Clinic (Aurora)	5-17 years	NR[w]	1:1[f]	4	12	1 MD[o], 0.5 AA[r]	Yes	No	No
Make it HAPPEN (Calgary)	6-17 years	100	1:1[f], G[g], Other	12	25	1.5 RD[m], 0.5 RN[n], 1 AA[r], 0.5 CM[y]	No	Yes	Yes
OAR (Hamilton)	3-17 years	NR[w]	1:1[f], G[g], O[z], LC/C[h], SEP[i], ERD[j], P[k], S[x]	1	1	2 P(MD)[l], 2 RD[m], 1 F[p], 1 RN[n], 1 AA[r], 2 R[u]	Yes	Yes	Yes

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Continued…

Program	Ages Serviced	Annual Enroll-ment	Type & Style of Interv'n[a]	Interv'n Length (weeks)[b]	F/U Length (weeks)[c]	Team Members FTE[d]	Assess RTC[e]	Formally Evaluated	Research
Pediatric Centre for Weight & Health (Edmonton)	8-17 years	100	1:1[f], G[g] LC/C[h]	16	104	1 P(MD)[l], 2 RD[m], 2 F[p], 1 RN[n], 1 P[q], 1 AA[r], 1 CM[y], 2 R[u], 1 GS[v]	Yes	Yes	Yes
Pediatric Weight Clinic (Calgary)	6-18 years	NR[w]	1:1[f] LC/C[h], SEP[i], ERD[j], P[k]	14	52	1 AA[r], all staff part-time	Yes	No	Yes
Weight Management Clinic (Montreal)	5-18 years	25	1:1[f] LC/C[h], SEP[i], ERD[j]	208	208	1 P(MD)[l], 1 RD[m], 0.5 AA[r], 0.5 P[q]	Yes	No	Yes

Continued…

Continued…

Program	Ages Serviced	Annual Enroll-ment	Type & Style of Interv'n[a]	Interv'n Length (week[b]	F/U Length (weeks)[c]	Team Members FTE[d]	Assess RTC[e]	Formally Evaluated	Research
Weight Management Clinic – Montreal Children's Hospital	10-18 years	100	1:1[f] SEP[i], ERD[j], P[k]	104	104	1 MD[o], 0.5 RD[m], 0.5 AA[r], 0.5 GS[v]	Yes	No	Yes

[a] Type and Style of Intervention provided
[b] Length of Intervention provided
[c] Length of Follow up provided
[d] The number of Full Time Equivalent staff associated with program
[e] Program assesses Readiness to Change
[f] One on one intervention provided
[g] Group intervention provided
[h] Lifestyle coach/Counselling intervention provided
[i] Structured exercise program intervention provided
[j] Energy reduced diet intervention provided
[k] Pharmaceutical intervention provided
[l] Pediatrician
[m] Registered Dietitian
[n] Registered Nurse
[o] General Practitioner/Physician
[p] Fitness Professional
[q] Psychologist
[r] Administrative Assistant
[s] Data analyst
[t] Counsellor/Social Worker/Child and Youth Worker
[u] Researcher
[v] Grad Student
[w] No response provided on questionnaire
[x] Surgical intervention provided
[y] Patient Care Manager
[z] Online intervention provided

The Family Lifestyles Program

The one program included in the environmental scan that directly relates to this research study services the WHR in Manitoba. This section will provide an overview of the creation of this program, including the rationale for its creation, identifying who this program services, the program goals and program design.

Community-Based Program

The FLP is a community based program, offered at the downtown Winnipeg location of the WRHA NFS offices (at the time of this study). This location is central within the WHR, with meeting rooms available to incorporate both the individual appointments and family group education sessions to be discussed. Assessment and follow up appointments are conducted on an individual basis, usually during regular work hours. The family group education sessions are held during weekday evenings throughout the school year.

Rationale for Program Creation

The FLP was created by the NFS Department of the WRHA in September 2005 in response to the regular receipt of referrals for individuals within the pediatric population whose body mass-for-age and gender is classified by the Canadian Medical Association (2007) as overweight (between 85th and 95th percentiles) or obese (greater than the 95th percentile) living in the City of Winnipeg and surrounding area. On average, five to seven, but as many as 12 referrals a week are received by NFS with *pediatric overweight/obesity* checked

off as the reason for the referral. A program was needed to best service the families being referred.

Who is Serviced?

Referrals are received from several health care providers, family members, and even individuals. Most referrals are accepted from pediatricians, general practitioners, or pediatric specialists, but physiotherapists, occupational therapists and social workers involved in the school system and acute care and community dietitians also provide referrals.

For children referred who are less than 8 years of age, or older than 15 years (those individuals are not included in the FLP) a similar process of assessment, goal setting, monitoring and problem solving on an individual basis is followed. Any pediatric overweight/obese referrals received for individuals between the ages of eight and 15 years are screened into the FLP.

Program Goals

The primary goal of this program is to promote the health (and quality of life) of participants through the engagement in healthy lifestyle behaviours (healthy eating and regular physical activity). Body weight is not a focus; the program provides an educational family-focused, behaviourally-based program for children with 2 main outcomes: (1) the increased number of healthy lifestyle behaviours the youth regularly participate in, to be facilitated by (2) the active role-modelling of healthy lifestyle behaviours by their parents/caregivers.

Program Design

The first year of programming was facilitated entirely by a Registered Dietitian (RD). The program has evolved based on staffing changes and formative evaluation results. A physiotherapist (PT) joined the program in the Fall of 2006, allowing co-facilitation of the family group education sessions by both the RD for the nutrition topics and the PT for the physical activity topics. At the time of data collection, the components of the program included an information session for the parents of the referred children, an individual family lifestyle assessment, five family group education sessions, and individual family follow-up sessions (optional). Part of the development, implementation and evaluation of the FLP is facilitated within the learning activities of the dietetic interns completing their community – primary care placement of the Manitoba Partnership Dietetic Education Program of the WRHA.

Information session. Once families are screened into the program from the medical referrals received, parents receive a letter in the mail briefly outlining the FLP and requesting the parent(s) to phone into the clinic to register for an information session, if interested. This step allows for those in the Precontemplation Stage to be eliminated. If parents do not identify that there is an issue with their child's weight/eating habits/physical fitness levels, they will not contact the clinic for more information.

Information sessions are held approximately every two months, with attendance of up to 20 families represented. This session, attended by parents only, is an opportunity for the RD and PT to explain the philosophy behind the program (the goal being behaviour change, not specifically weight loss), the

emphasis on goal setting and monitoring, and the expectations that parents will be active participants throughout the program and provide positive role modelling, messaging and a supportive home environment for healthy behaviour changes to occur. Following the information session, caregivers can make an informed decision as to whether their family will participate in the FLP.

Family lifestyle assessment. The family is seen on a one-on-one basis by the dietitian/dietetic intern. This session, lasting approximately 60 minutes, is an opportunity to focus on the current behaviours being followed by all family members in attendance. Discrepancies between the current behaviours and healthy eating and physical activity guidelines are identified. As different family members may be at different stages of readiness, several different strategies may be implemented, including principles of MI, using various processes of change, information provision, and problem solving may be utilized throughout this session. If family members are in a 'preparation' or 'action' stage of change, goal negotiation will take place. Self-monitoring the achievement (or not) of such goal between the assessment appointment to the start of the family group education sessions is encouraged.

Family group education sessions. A series of five family group education sessions is offered to the families, during weekday evening hours, for two groups: 8-12 year olds and 13-15 year olds. Both groups run for 60 minutes and contain similar content/key messages, but are facilitated using learning activities specific to each group. Besides focusing on a nutrition topic, physical activity topic and performing a fitness break (whereby the program facilitators role model

ways caregivers can encourage physical activity within their family units given common constraints of limited space and requiring little equipment), each session also incorporates aspects of goal setting, self-monitoring and discussing the potential barriers that inhibit accomplishment of goals. Inability to accomplish the previously set goal often results in problem solving to modify the goal given the barriers, to increase the likelihood of success, or establishing a new goal to focus one's efforts on.

The key messages presented throughout the nutrition component of the group sessions relate to all foods fitting into a healthy way of eating, but recognizing some foods as everyday choices versus those that should be included only occasionally. These messages are presented through various learning activities to help the family members not only identify the everyday choices of foods and beverages rich in nutrients required by our bodies, whether at home, while grocery shopping, or eating out at a restaurant, but also to challenge them to modify their behaviours to live this philosophy.

Family group education sessions content. The nutrition topics for the first four sessions include: Red, Yellow, Green; Beverages; Menu Planning & Label Reading; and Eating Out. Using a variety of food pictures and packages and coloured bags, participants are introduced to categorizing foods as either everyday choices (Green), a couple of times a week choices (Yellow) or occasional choices (Red) in the first session, Green, Yellow, Red. Parents are encouraged to ensure the choices available at home are mostly Green choices, with a few Yellow choices, and to ensure Red choices are not in the home

regularly. All participants are encouraged to choose most often foods that contain healthy nutrients and fibre but not too much fat or sugar (Green choices). Foods containing too little fibre or containing nutrients but also a high amount of fat (Yellow choices) are okay a couple of times a week, but not every day choices. Foods containing little nutrients but high in fat and/or sugar or salt (Red choices) are encouraged on an irregular/occasional basis.

In an interactive session involving several beverage containers, the second session's nutrition topic focuses on beverages. The Green beverage choices (skim, 1% or chocolate milk and water) are discussed for the important nutrients they provide and their role in keeping our body healthy, and the daily recommended amounts are discussed as they relate to the ages of the participants. Juice (a Yellow choice) is discussed in terms of something our body does not need, and how our body benefits more from eating a piece of fruit than from drinking juice. Maximum recommended amounts (half a cup or one juice box daily) are discussed. The difference between fruit juice and the Red beverage choices of fruit drink, fruit cocktail, fruit punch and fruit beverage and the comparison in terms of the sugar content of each to other Red beverage choices such as soft drinks, iced tea, slurpees, and sports and energy drinks is demonstrated. Participants are encouraged to choose milk (Green choice) at meals to meet their nutrient requirements and water (Green choice) between meals to quench their thirst. Juice (Yellow) is acceptable in small amounts, but not necessary, and the Red choices should not be consumed regularly. Parents

are encouraged to role model these recommendations, have milk and water available all the time, and limit the availability of other beverage choices at home.

The third session, Menu Planning and Label Reading, provides a hands-on experience with planning meals for the family in advance, using tools from the Dairy Farmers of Canada and one adapted from a tear-off sheet purchased at a dollar store. The meal planning part of the session focuses on nights that the family has little time between school, work, and extra-curricular activities to eat, and provides suggestions on nutritious meals that can be produced within a 10-15 minute timeframe, to decrease the likelihood of relying on convenience foods or fast food restaurants. Parents are encouraged to include family members in regular meal planning to save time, money, food wastage and sanity as well as increasing the number of nutritious meals made at home. The second part of the session provides participants the opportunity to compare the Nutrition Facts Table of several cereal boxes, bread bags and granola bar packages, for example, to determine which items would be considered every day (Green) choices versus a couple of times a week (Yellow) choices versus occasional (Red) choices.

The nutrition topic for the fourth session centers on Eating Out, with two main objectives: i) decreasing the frequency the family eats outside the home, and ii) providing practical suggestions to help participants make healthful choices when eating out. The fifth session does not have a specific nutrition topic, but focuses instead on the ability of each participant to maintain his/her previous goals during the four week absence from the FLP. Strategies are discussed to

help participants be successful at maintaining their healthy behaviours, but also how to progress one's goals after completing the program. The end of the program is not intended to be the end of the participant's vigilance in making and maintaining healthy lifestyle behaviours.

For a sample of a lesson plan designed for the 8-12 year old group (Green, Yellow, Red) see Appendix A. Appendix B is the participant handout provided to reinforce the information to the 8-12 year old group from the Green, Yellow, Red session. Appendix C provides a sample of the Beverages lesson plan presented to the 13-15 year old family group education session, as part of the second week's nutrition topic. No specific handout is used to reinforce these messages.

Goal setting and self-monitoring are strategies used throughout the group sessions. Each family receives a program booklet at the first family group education session. Before the end of this session, each family is encouraged to complete the 'action plan' page within the booklet, which results in having a goal they want to work towards. The family may write one goal to work on together as a family, or each member of the family may choose his/her own goal. There can be two goals – one related to nutrition and one related to physical activity.

The program booklet also contains tracking sheets, to allow each family or family member track the achievement of the goal(s) chosen. At each subsequent family group education session, one of the program facilitators will touch base with each family individually, to determine whether the goal was met. If met, the family is likely in the Action Stage of Change. The 'rewards' and 'helping

relationships' processes of change are used to help the family maintain the behaviour change for another week. A decision may be made to also progress or increase the goal. The new goal is recorded, and the family is once again encouraged to track the achievement for another week.

If the goal is not met, the resulting discussion revolves around what barriers got in the way of achieving the goal. These families may not have successfully made the switch from the Preparation Stage into the Action Stage. The processes of change of 'self-liberation', 'commitment' and 'environmental control' may be used to help the family be successful in the Action Stage. The goal may be modified to reflect the barriers, or abandoned for one that may be more realistic given the circumstances.

The first four sessions are held over four consecutive weeks, with the fifth and final session offered one month after session four. There is no new information introduced related to nutrition at this session. The design of a four week break between the fourth and fifth sessions allows for families to try maintaining their behaviours when not prompted on a weekly basis as to how their goal accomplishment is proceeding. The focus of the final session is how to maintain goals and continue to use the process to progress the goals following the end of the family group education sessions.

Family follow up. Some families report that they get what they need from the FLP from the assessment and family group education sessions and subsequently are discharged at that point. For other families, family follow up sessions are available on an individual basis with the dietitian/dietetic intern to

continue to set, monitor and accomplish goals related to healthy eating, increasing physical activity and decreasing sedentary activities.

The Family Lifestyles Program incorporates all four commonalities, previously mentioned by the literature, for pediatric weight management treatment programs, into its design. It is based on a family-centered approach (as outlined by Barlow & Dietz, 1998; Faith et al., 2001; Jonides et al., 2002; and Batch & Baur, 2005).; focuses on increasing a variety of healthy behaviours, from healthy eating to increasing physical activity and decreasing sedentary activities (as identified by the Healthy Active Living Committee, Canadian Paediatric Society, 2002; Ritchie et al., 2005; and Scottish Intercollegiate Guidelines Network, 2003).; uses a combination of behavioural approaches (as acknowledged by Kirk et al., 2005 and Epstein et al., 2001), and includes regular contacts with health care professionals (reported by the Ontario Medical Association, 2005; and Registered Nurses Association of Ontario, 2005).

Family-centered. The FLP definition of "family" is broad. All family members that are involved in providing guidance to the referred youth through meal provision or leisure time activities are welcome to participate. It is required that for each referred youth participating in the program, at least one parent/caregiver be present. However, it is not uncommon for both parents to participate (even if they represent separate households). Families have also consisted of step-parents, grandparents, and aunts/uncles. As the program focuses on behaviours of the whole family, siblings are welcome to also attend.

Healthy behaviours. Several healthy eating behaviours as well as increasing physical activity and decreasing inactivity are discussed throughout the various components of the program, and the accomplishment of these behaviours is facilitated through the use of several behavioural approaches.

Behavioural approaches. The program incorporates aspects of the TTM, MI, goal setting, self-monitoring and problem solving. As parents are invited to contact the clinic to register for an information session, it can be assumed that those parents who follow through will be beyond the Precontemplation Stage of Change. They may be in the Contemplation Stage, recognizing a need for changes to current behaviours, but they may not be committed to making a change in the near future. Brief interventions during the assessment, group sessions or follow ups following the FRAMES model, can help move the family members through the various stages of change, and goal setting, self-monitoring and problem solving can further enhance the likelihood of making and maintaining the behaviour changes, one change at a time. For the participants in the Preparation Stage or those in the Action Stage focus on adding new behaviours while being careful to prevent relapse will be the focal point of the intervention.

Regular contacts. Families are guaranteed eight contacts with the dietitian, six of those visits include contact with the physiotherapist. Families are usually involved with the program for at least three months, but it can often span a six month time period or longer.

Summary

The literature review presented identifies the multifaceted components (family-based, healthy behaviour-focused, using behavioural strategies and including several contacts) used by various international pediatric obesity programs, but also nationally (e.g. The Canadian Obesity Network environmental scan) and even locally (e.g. the FLP). It appears that the FLP has incorporated appropriate team members, components, and strategies in the program design, however, does the program outcomes live up to the learner objectives, specifically from a nutrition education standpoint?

CHAPTER 3

METHODOLOGY

This chapter includes a description of the methodology used to investigate the objective of this study: to determine whether caregivers' nutrition knowledge and/or their attitudes about nutrition change as a result of attending the family group education sessions of the FLP. This chapter includes the rationale for the quantitative study design, a report of the ethical considerations, a description of the survey instrument development process, and the procedures for both data collection and statistical analysis.

Study Design

A quantitative exploratory study design using a self-administered, closed question survey completed over three time periods of the program intervention was used to explore whether a change in knowledge and/or attitudes related to nutrition occurred as a result of completing the family group education sessions of the FLP.

Participants

A convenient sample was used to recruit caregivers who attended the FLP group education sessions with their families, between November 2008 and May 2009. To respect the rights of the caregivers who agreed for their family to participate in the FLP following their attendance at an information session (described in the previous chapter) and to determine interest in participating in the research study, the principal investigator contacted the caregivers by telephone the week prior to the first family group education session (described in

the previous chapter). A script (Appendix I) was read out to the caregiver explaining the purpose and benefits of the study, that all information provided would remain confidential and anonymous, how the results would to be used and opportunity was provided for caregivers to ask questions. An informed consent form was then mailed to the caregiver(s) (Appendix J). If the caregiver was willing to participate, it was returned during attendance at the first family group education session, where it was signed by both the participant and the principal investigator. For those willing to participate who did not return the consent form at the first group session, blank consent forms were available at the first session, for completion.

For the families who attended the family group education sessions between November 2008 and May 2009, the parents attended an information session at one of the following times: September 16, 2008, October 22, 2008, January 21, 2009, or March 4, 2009. Of the 34 families (totaling 40 parents) who attended one of these four information sessions, 25 consenting families participated in at least one session of the family group education series of the FLP during the data collection process. In total, 34 caregivers (32% male; 68% female) representing the following breakdown as to their relationship to the youth referred to the FLP: 85% parent, 6% guardian, 6% grandparent and 3% other, completed the Time 1 (pre-test) survey. The final sample included those participants who attended both Time 1 and Time 2 survey administration family group education sessions, completed and returned the Time 3 survey, and completed at least 75% of all three surveys (missed no more than 6 responses

on any one survey). Table 2 presents the characteristics of the study participants who completed surveys at all three time periods.

Table 2 Characteristics of Study Population

Characteristics	Time 1 Sample (N=34)	%	Time 2 Sample (N=21)	%	Time 3 Sample (N=17)	%
Gender:						
Male	11	32	6	29	4	23
Female	23	68	15	71	13	77
Relationship to referred Youth:						
Parent	29	85	20	95	16	94
Aunt/Uncle	0	0	0	0	0	0
Legal Guardian	2	6	1	5	1	6
Grandparent	2	6	0	0	0	0
Other	1	3	0	0	0	0

Survey Instrument – The Family Lifestyles Program Nutrition Knowledge and Attitudes Caregiver Survey

A self-administered survey method was chosen to allow for survey completion during the short timeframe (10 minutes) allocated during the facilitation of the family group education sessions (60 minutes total, including education time) by all participants present. The survey was created with a reading level, according to the Flesch-Kincaid method, of 6.4, to allow for easy understanding by the majority of the participants. Research assistants were available during survey administration, if assistance was required. A closed question format was chosen, one with questions requiring the participant to simply check a box next to the appropriate response from a list provided by the researcher. The ease of response of this type of question helps maximize survey completion and self-administered open answered responses often do not produce useful data (Fowler, 2009).

A literature search was conducted to find a self-administered nutrition questionnaire that could be completed within a 10 minute timeframe to address program-specific nutrition knowledge and attitude content. Although more than a dozen questionnaires were found focusing on knowledge and/or attitudes related to nutrition, no one questionnaire could be found to meet the specific criteria for this study.

Several of the studies targeted a specific population, such as athletes with disabilities (Rastmanesh, Taleban, Kimiager, Mehrabi, & Salehi, 2007), postpartum low-income women (Nuss, Freeland-Graves, Clarke, klohe-Lehman,

& Milani, 2007), children (Stapleton et al., 2000; Verrall, Berenbaum, Chad, Nanson, & Zello, 2000; Penkilo, George & Hoelscher, 2008), adolescents (Turconi et al., 2003), or University students (Kolodinsky, Harvey-Berino, Berlin, Johnson, & Reynolds, 2007; Mazier & McLeod, 2007). Although some questions from these surveys reviewed were applicable to content delivered within the FLP, the entire survey did not fit, as questions were also included that focused on subjects outside the scope of this study, such as food habits (Turconi et al., 2003), physical activity (Penkilo et al., 2008; Turconi et al., 2003), vitamin and mineral supplement use (Verrall et al., 2000) and food safety (Turconi et al, 2003), and others targeted specific issues, such as nutrition and pancreatic enzymes related to cystic fibrosis (Stapleton et al., 2000), or knowledge solely around fat (Mazier & McLeod, 2007).

Four surveys targeted adults on general nutrition knowledge. One of these surveys included several questions on behaviours (Serra-Majem et al., 2007), which is outside the scope of this study, while the other three (Parmenter & Wardle, 1999; Shepherd & Towler, 2007; Weststat Inc., 1996) included knowledge questions that went into much greater detail than that which was presented as content within the FLP and too lengthy with as many as 150 questions. These surveys would require much more time than the FLP allocated for survey completion (10 minutes). The final questionnaire reviewed (Kearney et al, 2001) focused solely on attitudes and beliefs related to nutrition. Of the three attitudinal questions included, two related to FLP content, but not the third.

The Family Lifestyles Program Nutrition Knowledge and Attitudes Caregiver Survey (hereafter referred to as 'the survey') was therefore developed to include items that were similar to those from other survey instruments (Kearney et al., 2001; Penkilo et al., 2008; Turconi et al., 2003; Verrall et al, 2000; and Westat Inc., 1996), and some new items created to assess knowledge and attitudes of FLP specific content, not found within the literature.

As the number of questions had to be limited to allow for completion within the short timeframe allocated within the facilitation of the program, it was decided to include no more than a dozen questions within each of the knowledge and attitudinal areas, with equal focus on both.

Knowledge-Based Questions

The key messages presented throughout the nutrition component of the family group education sessions relate to all foods fitting into a healthy way of eating, but recognizing some foods as everyday choices versus those that should be included only occasionally. These messages are presented through various learning activities to help the family members not only identify the everyday choices of foods and beverages rich in nutrients required by our bodies, whether at home, while grocery shopping, or eating out at a restaurant, but also to challenge them to modify their behaviours to live this philosophy. The knowledge questions of the survey are designed to measure this specific nutrition content of the program.

Questions 3, 4, 5, 6, and 7 (as outlined in both the pre-test and post-test in Appendices K or L) require participants to identify factors such as fibre, sugar, or

fat content to identify the food choices that would be considered ‘everyday’ choices from those that may lack fibre or contain excess sugar or fat that would not make them healthy choices ‘everyday’. This concept is introduced during the first family group education session, and further enhanced during each subsequent family group education session. Questions 8 & 9 were adapted from Penkilo et al. (2008), focusing on serving size recommendations from Eating Well with Canada’s Food Guide (Health Canada, 2007), and discussed during the third session topic of meal planning. Questions 10 & 11 were created to target the nutrition messages as they relate to beverage choices, a focus of the second family group education session. Question 12, borrowed from Turconi et al. (2003), relates to the overall message of all foods fitting in the recommended amounts, part of the discussion during the meal planning session. Question 13, from Verrall et al. (2000) focuses on the importance of whole grains because of their fibre content, and question 14 (created by the researcher) completes the knowledge section of the survey by addressing a true and false formatted question addressing the key message once again that all foods fit within a healthy diet. Other than this one true/false question, all other knowledge questions were presented within a multiple choice format, with one correct answer and three incorrect.

Attitude-Based Questions

The attitudinal measures focused on four different aspects: i) the importance of nutrition, ii) attitude toward child’s and own feeding behaviour, iii) attitude toward specific FLP content (meal planning and label reading), and iv)

perceived effort in providing healthy foods to family and in role modelling healthy eating behaviours. The two questions (questions 15 & 16) relating to the 'importance of nutrition' questions were borrowed from Verrall et al. (2000), as were two of the 'attitude toward child's and own eating behaviour' (questions 17 & 18). The third question for this second aspect (question 19), that dealt specifically with the attitude towards the parents' own eating behaviour was borrowed from Kearney et al. (2001). For the attitudinal questions targeting specific FLP content, three questions (questions 20, 21 and 22) were taken from the *What We Eat in America: 1994-1996 Diet and Health Knowledge Survey Questionnaire* conducted for the United States Department of Agriculture (Weststat Inc., 1996), focusing on attitudes towards using nutrition labels, and two questions (questions 23 & 24) were created by the researcher with similar wording to target the use of meal planning techniques. Kearney et al. (2001) provided question 25, focusing on the final attitudinal aspect, of perceived effort to providing healthy foods to family and in role modeling of healthy eating behaviours. Question 26, the final question of the survey was created, by the researcher, upon review of question 25, to focus on the role of the parent as gatekeeper to providing a supportive environment for his/her family to ensure healthy behaviours are followed.

The formatting of the attitudinal questions, a five-point Likert scale, with the responses 'strongly agree', 'agree', 'neutral', 'disagree' and 'strongly disagree' was used, as this scale was common among the instruments from which the adapted/borrowed questions were taken. The exception being the last

two questions, which dealt with the frequency at which the participant agreed or not to the statement, with a four-point scale borrowed from Kearney et al. (2001) of ‘most of the time’, ‘quite often’, ‘now and again’, and ‘hardly ever’.

The first page of both the pre-test (Appendix K) and post-test (Appendix L) surveys allowed the participant to identify himself/herself by name, and the date the survey was completed, along with two demographic based questions. The pre-test had the participant identify his/her gender and relationship to the youth referred to the FLP. Participants were allowed to select as many responses as were appropriate for their relationship to the youth referred, with the options of parent, aunt/uncle grandparent, guardian, or other, as caregivers could realistically provide more than one role within the family unit. The two questions included on the front page of the post-test had the participant identify whether he/she attended all four family group education sessions, and if not, which one(s) was/were missed.

The survey was evaluated for content validity by three dietitians, whose job responsibilities include community dietetics, clinical dietetics and nutrition education respectively. Revisions were made based on the comments from this review.

Data Collection Procedures

Table 2 outlines the data collection procedures. Three separate series of five family group education sessions were run of the FLP between November 2008 and May 2009. For each of the three series, the survey was administered to the caregiver participants, over a 10 minute time period, at the start of the first

session (pre-test) and at the end of the fourth session (post-test). The survey was administered a third time (post test) for each series, via mail, during the week of the fifth and final family group education session, which was approximately eight weeks from the first session. After completing the final survey, participants were to return it in the self-addressed, stamped envelope provided. A draw for a gift certificate to a local grocery store was provided as an incentive for participants to return the mailed surveys.

Completed surveys were collected from the participants by the research assistants who compared the participant name to a master list that included a randomly generated code. The research assistants then wrote the corresponding code onto each page of the completed survey and removed the front page, to allow for confidential analysis of the acquired data.

Once the front page was removed by the research assistants, the survey questions were almost identical. The footer provided the only differentiation between the pre-test or post-test versions. To ensure data from each of the time periods would be analyzed together, and no mix up of results occurred, during the data analysis stage, the different versions of the survey were copied onto different coloured paper, Time 1 – white, Time 2 – green, Time 3 – yellow.

Table 3 Data Collection Procedures

Dates	Event	Corresponding FLP Session	Method
Sept. 16, 2008 Oct. 22, 2008 Jan. 21, 2009 Mar. 4, 2009	Recruitment to FLP	FLP Information Session	In-person
Oct. 27-31, 2008 Jan. 26-30, 2009 Mar.30-Apr. 3, 2009	Recruitment to Study	Week prior to Session 1	Phone call, using recruitment script
Nov. 5, 2008 Feb. 4, 2009 Apr.8, 2009	Time 1 (pre-test white) completion	Session 1	In-person
Nov. 26, 2009 Feb. 25, 2009 Apr. 29,2009	Time 2 (post-test – green) completion	Session 4	In-person
Jan. 12, 2009 Mar. 25, 2009 May 25, 2009	Time 3 (post-test-yellow) completion	Week of Session 5	Mailed survey

Ethics

To protect the rights and welfare of the participants in this research study, a dual Ethics Board approval process was undertaken to ensure no harm was done to participants, that no deception took place during the process, and to ensure participants would remain anonymous, and how the data would be handled to assure confidentiality. As the principal investigator was also a program facilitator of the FLP being studied, the process also outlined how the study design would minimize any potential researcher-effects. Ethical approval was received from the Education/Nursing Research Ethics Board (ENREB) at the University of Manitoba (Appendices D, E, F and G) and the Research Review Committee (RRC) of the WRHA (Appendix H).

Statistical Analysis

Data was entered, cleaned and analyzed. A statistician from the Statistical Advisory Service of the University of Manitoba was consulted to ensure proper preparation of the data and appropriate analyses were conducted. To test for significance of differences between the three time periods, one-way analysis of variance (ANOVA) tests were performed, and a p value of <0.05 was considered significant. For the knowledge questions, scores were tabulated and the percentage of correct answers was compared between all three time periods. Percentage scores were used for comparison as opposed to raw scores as there were a few instances where one or more knowledge question was not answered by a participant. By using the percentage score, the overall test results could be

compared for all three time periods. For the attitudinal questions, a one-way ANOVA was performed for each question across all three time periods.

Exclusion criteria from the final study sample included missing Time 2 survey administration and/or not returning Time 3 completed survey, as well as any survey that had more than 5 missing answers (25%). All data analyses were performed using SPSS Inc. (2007).

Summary

The methodology chosen to answer the research question guiding this study was described in this chapter, including the evidence-based decisions relating to the development of a self-administered, close-ended question survey for this quantitative exploratory study, and the statistical strategies determined to best analyze the results.

CHAPTER 4

RESULTS

This chapter includes a description of the findings that resulted from the administration of the survey over three time periods with the caregivers who attended the FLP with at least one child/adolescent between November 2008 and May 2009. This chapter begins with the characteristics of the study population, followed by a description of the responses reported for each question over all three time periods of the final sample. The knowledge-based questions are reported separate from the attitude-based questions.

Survey Responses

Knowledge-Based Questions

The aggregate responses to the knowledge questions (questions 3-14) are outlined in Table 4. Two questions had a 100% correct response rate at all three time periods, while two other questions saw a shift towards a 100% correct response rate by Time 3. Three questions saw an increase in the overall number of correct responses between Time 1 and Time 2, while two other questions saw a decrease in correct responses from Time 1 to Time 3, despite improved correct response numbers at Time 2.

The statistical analysis of the aggregate percentage scores are presented for all three time periods in Table 5. The mean score from Time 1 was 89.0, which increased (but not to a level considered significant) to 93.2 by Time 2, and returned to a similar level to where the participants started, by Time 3, to 89.2.

Table 4 Knowledge Question (Questions 3-14) Responses

Question	Responses (n=17)		
	Time 1	Time 2	Time 3
What is the healthiest choice for every day?			
Fruit beverage	2 (12%)	1 (6%)	1 (6%)
Fruit drink	1 (6%)	0	1 (6%)
Fruit juice[a]	13 (76%)	16 (94%)	15 (88%)
Fruit punch	0	0	0
No response	1 (6%)		
What is the healthiest choice for every day?			
French bread	0	0	0
Rye bread	1 (6%)	0	0
White bread	0	0	0
Whole wheat bread[a]	16 (94%)	17 (100%)	17 (100%)
What is the healthiest choice for every day?			
Fruit cup / Canned fruit[a]	15 (88%)	15 (88%)	15 (88%)
Fruit leather	0	0	0
Fruit roll-up	0	0	0
Fruit snacks	2 (12%)	2 (12%)	2 (12%)

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Question (correct answer is in bold type)	Responses (n=17)		
	Time 1	Time 2	Time 3
What is the healthiest choice for every day?			
Milkshake	0	0	0
Whole (homo) Milk	0	0	0
1% Milk[a]	16 (94%)	17 (100%)	17 (100%)
2% Milk	1 (6%)	0	0
What is the healthiest choice for every day?			
Baked chicken[a]	16 (94%)	17 (100%)	17 (100%)
Chicken fingers	0	0	0
Chicken nuggets	0	0	0
Fried Chicken	1 (6%)	0	0
Which food group do you and your child/adolescent need to eat the most servings of?			
Grain Products	0	0	0
Meat and Alternatives	0	0	1 (6%)
Milk and Alternatives	0	0	0
Vegetables and Fruits[a]	17 (100%)	17 (100%)	16 (94%)

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Question (correct answer is in bold type)	Responses (n=17)		
	Time 1	Time 2	Time 3
Which food group do you and your child/adolescent need to eat the least servings of?			
Grain Products	4 (23%)	3 (18%)	3 (18%)
Meat and Alternatives[a]	11 (65%)	13 (76%)	10 (58%)
Milk and Alternatives	1 (6%)	1 (6%)	2 (12%)
Vegetables and Fruits	1 (6%)	0	1 (6%)
No response			1 (6%)
Which drink is healthy to have in large quantities (more than 4 Glasses per day)?			
Juice	0	0	0
Milk	0	0	0
Soft drinks	0	0	0
Water[a]	17 (100%)	17 (100%)	17 (100%)
Which drink contains calcium and vitamin D?			
Juice	0	0	0
Milk[a]	17 (100%)	17 (100%)	17 (100%)
Soft drinks	0	0	0
Water	0	0	0

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Question (correct answer is in bold type)	Responses (n=17)		
	Time 1	Time 2	Time 3
A balanced diet has:			
Mostly a high amount of protein	1 (6%)	0	0
Mostly a low amount of fat	0	0	1 (6%)
Mostly a low amount of carbohydrates	0	0	0
All nutrients in recommended amounts[a]	15 (88%)	17 (100%)	16 (94%)
No response	1 (6%)		
Whole grains are recommended in the diet because they:			
Are high in starch	0	0	0
Contain fibre[a]	13 (76%)	14 (82%)	14 (82%)
Contain vitamins	0	0	0
All of the above	3 (18%)	3 (18%)	3 (18%)
No response	1 (6%)		
Healthy eating means never eating foods high in fat or sugar:			
True	4 (24%)	4 (24%)	6 (35%)
False[a]	12 (70%)	13 (76%)	11 (65%)
No response	1 (6%)		

[a] All correct responses are in bold type.

Table 5 Repeated Measures ANOVA Results for the Knowledge Question Responses over 3 Time Periods

Questions 3-14	Time 1 Mean (SD)	Time 2 Mean (SD)	Time 3 Mean (SD)	F ratio	df	p value
Score (percentage)	89.0 (12.5)	93.2 (8.0)	89.2 (15.2)	1.43	2,32	0.253

* $p<0.05$ is considered statistically significant.

Attitude-Based Questions

The responses to the attitude-based questions from all three time periods are displayed in Table 6 while the statistical analysis of each question across each time period is presented in Table 7. Of the 12 attitude-based questions, participants demonstrated a statistically significant change ($p<0.001$ to $p=0.25$) in their responses to seven questions – Questions 17, 18, 20, 21, 22, 23, and 25, representing three of the four attitude measures.

Importance of nutrition. Of the two questions relating to the importance of nutrition, one demonstrated a greater percentage of 'strongly agree' and 'agree' combined responses (94% at Time 1 to 100%), while the other saw a decrease of combined 'disagree' and strongly disagree' responses' for the negatively worded statement (94% at Time 1 to 88% at Time 3) These results do not represent a significant difference across the measures in the three time periods [$F(2,32)=2.35$, $p=0.113$ and $F(2,32)=1.38$, $p=0.267$ respectively].

Attitude toward child's and own eating behaviour. The two questions relating to the caregivers' perception of their child's eating behaviour both demonstrated significant differences in responses across all three time periods [$F(2,32)=4.17$, $p=0.025$ and $F(2,32)=10.09$, $p<0.001$ respectively]. The responses showed 58% of the caregivers thinking their youth did not eat the right amount of food at Time 1 to 42% agreeing at Time 3. For being concerned their youth was not eating well, 64% agreed at Time 1, but 59% disagreeing at Time 3. However, the question relating to the parents' eating behaviour did not show significant differences [$F(2,32)=1.84$, $p=0.17$].

Attitude toward specific FLP content. The third measure of interest among the attitude-based questions related to caregivers' attitude toward specific FLP content (label reading and meal planning). All three questions related to label reading resulted in a significant difference among the three time periods [$F(2,32)=4.61$, $p<0.05$; $F(2,32)=10.36$, $p<0.001$; and $F(2,32)=4.28$, $p<0.05$ respectively] while only one of the two questions relating to meal planning, Question 23, was significant [$F(2,32)=8.57$, df=2,23, $p<0.01$]. The second meal planning question, Question 24, however, was not significant [$F(2,23)=2.73$, $p=0.080$] across all three time periods.

For the significantly different responses, the parents' recognition regarding the usefulness of food labels increased from 1.8 at Time 1 to 1.3 at Time 2, with a slight decrease at Time 3 to 1.4, as did the recognition that better food choices are made when focusing on using food labels: 1.9 at Time 1 compared to 1.7 at Time 2 and 1.4 at Time 3, but their confidence in using food labels decreased: 1.5 at Time 1 compared to 1.6 at Time 2 and 2.2 at Time 3.

Perceived effort in providing foods to family and in role modelling healthy eating behaviours. Of the last two attitude-based questions, targeting the final measure, the perceived effort in providing foods to their family and in the role modeling of healthy eating behaviours, the first question (Question 25) demonstrated a significant difference across the three time periods [$F(2,32)=4.67$, $p<0.05$] while the final question, Question 26, did not [$F(2,32)=2.55$, $p=0.094$]. Although not significantly different, the parents responded from the start (Time 1) with a 94% combined response of 'most of the

time' and 'quite often' to Question 26, demonstrating the importance of providing healthy foods to their families, which increased to a combined score of 100% by Time 3

Summary

The study results show no significant differences in the percentage scores across all three time periods in respect to the caregivers' nutrition knowledge. When considering the caregivers' attitudes towards nutrition, significant responses were found in three of the four attitude measures. The following chapter will discuss the implications of these results in greater detail.

Table 6 Attitudinal Question (Questions 15-26) Responses

Question	Responses (n=17)		
	Time 1	Time 2	Time 3
People of all ages should be concerned about eating healthy diets.			
Strongly agree	11 (65%)	14 (82%)	15 (88%)
Agree	5 (29%)	2 (12%)	2 (12%)
Neutral	0	0	0
Disagree	0	0	0
Strongly disagree	0	1 (6%)	0
No response	1 (6%)		
Nutrition is not that important.			
Strongly agree	0	0	0
Agree	1 (6%)	0	2 (12%)
Neutral	0	0	0
Disagree	5 (29%)	3 (18%)	3 (18%)
Strongly disagree	11 (65%)	14 (82%)	12 (70%)
Overall, I think my child/adolescent eats about the right amount of food.			
Strongly agree	1 (6%)	1 (6%)	0
Agree	3 (18%)	7 (41%)	7 (42%)
Neutral	3 (18%)	7 (41%)	5 (29%)
Disagree	10 (58%)	2 (12%)	5 (29%)
Strongly disagree	0	0	0

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Question	Responses (n=17)		
	Time 1	Time 2	Time 3
I am concerned my child/adolescent is not eating well.			
Strongly agree	0	0	0
Agree	11 (64%)	1(6%)	5 (29%)
Neutral	3 (18%)	5 (29%)	2 (12%)
Disagree	3 (18%)	9 (53%)	10 (59%)
Strongly disagree	0	2 (12%)	0
I don't need to change my diet as it is healthy enough.			
Strongly agree	0	0	0
Agree	1 (5%)	2 (12%)	3 (18%)
Neutral	3 (18%)	5 (29%)	3 (18%)
Disagree	10 (59%)	10 (59%)	9 (53%)
Strongly disagree	3 (18%)	0	2 (11%)
The nutrition information on food labels is useful to me.			
Strongly agree	8 (47%)	13 (76%)	11 (65%)
Agree	6 (35%)	3 (18%)	6 (35%)
Neutral	2 (12%)	1 (6%)	0
Disagree	1 (6%)	0	0
Strongly disagree	0	0	0

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Question	Responses (n=17)		
	Time 1	Time 2	Time 3
I feel confident that I know how to use food labels to choose a healthy diet.			
Strongly agree	2 (12%)	8 (47%)	9 (53%)
Agree	10 (59%)	8 (47%)	8 (47%)
Neutral	4 (23%)	1 (6%)	0
Disagree	1 (6%)	0	0
Strongly disagree	0	0	0
When I use food labels I make better food choices.			
Strongly agree	4 (23%)	8 (47%)	10 (59%)
Agree	11 (65%)	7 (41%)	7 (41%)
Neutral	1 (6%)	2 (12%)	0
Disagree	1 (6%)	0	0
Strongly disagree	0	0	0
I feel confident that I know how to plan healthy meals.			
Strongly agree	2 (12%)	7 (41%)	7 (41%)
Agree	10 (59%)	8 (47%)	10 (59%)
Neutral	1 (6%)	2 (12%)	0
Disagree	4 (23%)	0	0
Strongly disagree	0	0	0

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Question	Responses (n=17)		
	Time 1	Time 2	Time 3
I don't feel I have time to plan meals.			
Strongly agree	3 (18%)	0	1 (6%)
Agree	6 (35%)	7 (40%)	6 (35%)
Neutral	4 (23%)	3 (18%)	2 (12%)
Disagree	3 (18%)	6 (35%)	8 (47%)
Strongly disagree	1 (6%)	1 (6%)	0
I make conscious efforts to try to eat a healthy diet.			
Most of the time	9 (53%)	12 (71%)	12 (71%)
Quite often	2 (12%)	4 (24%)	5 (29%)
Now and again	6 (35%)	1 (5%)	0
Hardly ever	0	0	0
I make conscious efforts to provide healthy foods to my family.			
Most of the time	10 (59%)	13 (76%)	14 (82%)
Quite often	6 (35%)	4 (24%)	3 (18%)
Now and again	1 (6%)	0	0
Hardly ever	0	0	0

Table 7 Repeated Measures ANOVA Results for the Attitudinal Question Responses over 3 Time Periods

Question	Time 1 Mean (SD)	Time 2 Mean (SD)	Time 3 Mean (SD)	F ratio	df	P value
People of all ages should be concerned about eating healthy diets.	1.3 (0.48)	1.1(0.34)	1.1 (0.25)	2.35	2,32	0.113
Nutrition is not that important.	4.5 (1.01)	4.8 (0.39)	4.5 (0.80)	1.38	2,32	0.267
Overall, I think my child/ adolescent eats about the right amount of food.	3.3 (0.96)	2.6 (0.80)	2.9 (0.86)	4.17	2,32	**0.025***
I am concerned my child/ adolescent is not eating well.	2.5 (0.80)	3.7 (0.77)	3.3 (0.92)	10.09	2,32	**<0.001***
I don't need to change my diet as it is healthy enough.	3.6 (0.94)	3.5 (0.72)	3.9 (0.78)	1.86	2,32	0.172
The nutrition information on food labels is useful to me.	1.8 (0.90)	1.3 (0.90)	1.4 (0.49)	4.61	2,32	**0.017***

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Question	Time 1 Mean (SD)	Time 2 Mean (SD)	Time 3 Mean (SD)	F ratio	df	P value
I feel confident that I know how to use food labels to choose a healthy diet.	1.5 (0.51)	1.6 (0.62)	2.2 (0.75)	10.36	2,32	**<0.001***
When I use food labels I make better food choices.	2.0 (0.75)	1.7 (0.70)	1.4 (0.70)	4.28	2,32	**0.023***
I feel confident that I know how to plan healthy meals.	1.6 (0.51)	1.7 (0.69)	2.4 (1.00)	8.57	2,32	**0.001***
I don't feel I have time to plan meals.	2.6 (1.18)	3.1 (1.03)	3.0 (1.06)	2.73	2,32	0.080
I make conscious efforts to try to eat a healthy diet.	1.5 (0.47)	1.3 (0.61)	1.8 (0.95)	4.67	2,32	**0.017***
I make conscious effort to provide healthy foods to my family.	1.2 (0.39)	1.2 (0.44)	1.5 (0.62)	2.55	2,32	0.094

* P <0.05 considered a significant difference.

CHAPTER 5

DISCUSSION

Research Question: Does caregivers' nutrition knowledge increase and/or do their attitudes about nutrition change after attending the family group education sessions of the FLP? The results suggest that the caregivers' nutrition knowledge did not increase in response to attending the family group education sessions of the FLP. However, some changes did take place in their attitudes towards nutrition. The following section discusses these results, considers the limitations of the study, and concludes with recommendations for future research and practice.

Change in Nutrition Knowledge

Although the difference in knowledge throughout the three time periods is not statistically significant, the increase in mean percentage scores from Time 1 to Time 2 and the subsequent decrease from Time 2 to Time 3 to near Time 1 scores warrants discussion. Time 1 through Time 2 represent four weeks during which participants were attending weekly family group education sessions, whereas Time 2 through Time 3 represent four weeks of no contact with the FLP. As Prentice and Miller (1992) suggested, small effects may have enormous implications in a practical context, and as such, can in fact be important. Considering the FLP is a small program, with the treatment provided over a relatively short timeframe, it is only reasonable to expect a small, short, impact. Time 1 results suggest that the caregivers began the family group education sessions with good nutrition knowledge of the specific nutrition content of the

FLP. This finding is consistent with the Canadian Council of Food and Nutrition (2009) report that indicates that most Canadians consider themselves “very” or “somewhat” knowledgeable about nutrition. The five week intervention presented by the FLP, in the realm of pediatric obesity treatment, is a small, short intervention. The change in knowledge was also small and short, as evidenced by the slight increase in program specific nutrition content knowledge seen while the participants attended the four weekly sessions, but appears to have returned to baseline levels during the subsequent four week break from the sessions.

There appears to be the potential for a ceiling effect with these results. When the participants start with a score of 89% at Time 1, consideration should be made that there is not much more room from 89% to improve. If the ceiling effect could be minimized, a greater impact may be demonstrated relating to nutrition knowledge.

Change in Nutrition Attitudes

Both questions relating to measuring the caregivers’ attitudes towards the importance of nutrition were adapted from a questionnaire administered by Verrall et al. (2000). Fifty-two caregivers of children with cerebral palsy (CP) were recruited as a control group and 35 caregivers of children without CP comprised the comparison group. Both groups of caregivers completed self-administered questionnaires to measure nutrition knowledge, attitudes and beliefs. The comparison group caregivers demonstrated a positive attitude toward the importance of nutrition. This result is comparable to the responses of the caregivers completing the FLP survey. Although no significant differences

were noted for the importance of nutrition attitude questions across the three time periods, movement was seen in a positive direction with positive results. These results demonstrate that all the participants agree, if not strongly agree, that nutrition is important. This belief would have been present before the families initiated the program, which may be a reason they registered for the FLP in the first place. Although it did not increase to a statistically significant level throughout participation in the program, this belief appears to have been maintained with the caregivers' engagement in the FLP.

For the second caregiver attitude monitored, the caregivers' attitudes toward their child's and their own eating habits, the caregivers are not as concerned about their child/adolescent not eating well, and are more positive that their child/adolescent is eating the right amount of food at Time 3 compared to Time 1. These results suggest that the caregivers may have observed improved eating habits in their children and adolescents throughout the timeframe of the family group education sessions. Did the children/adolescents move into the Action Stage and start making healthier food choices throughout their involvement in the family group education sessions? This study cannot answer this question, as behaviour change was not measured.

Although the results relating to the caregivers' perceptions of their own eating habits are not considered statistically significant, the shift in responses is worth noting. The combined 'disagree' and 'strongly disagree' scores at Time 1 (77%) decreased at Time 3 (65%), with a three-fold increase in 'agree' responses from Time 1 (6%) to Time 3 (18%) indicates the caregivers were less likely to see

a need for a change within their own eating habits as they progressed through the FLP family group education sessions. The response change observed over the three time periods as to how often the caregivers consciously tried to eat a healthy diet showed an increased awareness of their own habits, as 65% responded either 'most of the time' or 'quite often' at Time 1 compared to 100% at Time 3. These responses suggest that the caregivers may have also made positive changes to their own eating habits throughout the timeframe of attending the family group education sessions, and moved into the Action Stage. These interpretations, however, cannot be quantified as this study did not measure actual behaviour change.

Although the caregivers' did not show significant changes to how often they make conscious efforts to provide healthy foods to their family, the combined response rates of 'most of the time' and 'quite often' were very positive at the beginning of the family group education sessions, and went from 94% at Time 1 to 100% at both Time 2 and Time 3. The caregivers' therefore were likely in action stage for this behaviour prior to initiating the family group education sessions. These responses tie into the responses discussed relating to perceived importance of nutrition. If the caregivers focus so much of the time on providing healthy options for themselves and their families, then nutrition, it would seem, would be important.

With respect to the caregiver's attitudes toward specific FLP content, the family group education sessions appear to have had a positive impact on the caregivers' perceptions relating to the usefulness of information on food labels,

how to use food labels, and that they themselves make better food choices when using food labels. Not only did the caregivers' attitudes shift positively during the four weeks of consecutive family group education sessions, but also during the four weeks of no FLP contact. This continued shift towards positive attitudes suggests that the program provided instruction that the caregivers used during the four week break from the program, which further enhanced the caregivers' attitudes toward the value of reading food labels. The family group education sessions appears to have also provided the caregivers with an increased confidence in planning healthy meals for the families, but did not impact their belief (in a statistically significant way) that they have time to plan meals, although a decrease from 53% at Time 1 to 41% was observed strongly agreeing or agreeing with the statement.

The educational strategies used to increase the caregivers' confidence in their ability to use food labels and choose healthier foods, as well as plan healthy meals for their families relied heavily on experiential learning activities as opposed to content focused learning activities. For example, participants were provided with actual food packages they could find in the grocery store the next time they went shopping. They were encouraged to apply the principles of reading food labels during the session, as opposed to having the facilitator stand at the front of the class and use one label as an example and explain the different components. For meal planning, each participant used the steps outlined by the facilitator for meal planning, using a tool provided, and created a plan they could relate tot heir own family. As demonstrated by the statistically

significant positives attitudes evidenced at Time 3, these experiential learning activities perhaps have played a role in the success of these lesson plans. However, the results also suggest that the incorporation of more experiential learning methods may be beneficial in building the caregivers' confidence in being able to perform these tasks within their extremely busy households.

The increased positive attitude shift observed in caregivers towards making better food choices when using labels is supported when grocery shopping (Variyam, 2008), and when ordering in restaurants when nutrition labeling information is provided (Roberto, Larsen, Agnew, Baik & Brownell, 2010). Literature measuring changes in attitudes towards label reading information and planning meals, however cannot be found to determine how these study results are, or are not, supported. Much of the label reading literature focuses on how the presence of food labels in dining halls (Driskell, Schake & Detter, 2008), food courts (Kolodinsky, Green, Michahelles, & Harvey-Berins, 2008) and restaurant menus (Roberto et al, 2010) impacts consumer choices, not how receiving education on how to read them changes knowledge and attitudes.

Educational Model

The educational model used for this study focuses on using the caregivers to provide positive role modelling to encourage lifestyle changes amongst individual family members, which in turn, benefits the entire family unit. The educational strategies used to enhance this process are several behaviour modification tools, including the TTM, MI, goal setting, self-monitoring and

problem solving. This framework is encouraged by the best practice guidelines for treating childhood obesity (Lau et al., 2006), and as evidenced by this study, can result in positive nutrition attitude changes. However, using this educational model, and incorporating different educational strategies appears to have its challenges. Pediatric obesity is a complex issue, and as such, one would expect the answers to also be complex. Wake et al (2009) found that family-based educational and behavioural based consultations by primary care physicians did not improve overweight status of mildly obese five to 10 year olds when compared to controls when assessed at a 6 months follow up. In a meta-analytic review of 64 pediatric obesity programs, using educational interventions to decrease body mass index (BMI), Stiles, Shaw & Marti (2010) found only one out of five made limited success with statistically significant BMI decreases. Wake's study and Stiles review both used weight or BMI as an outcome measure. This current study did not measure impact on weight, but focused on impacts on knowledge and attitudes. A gap in the literature is connecting how knowledge and attitudes can equate into making changes in behaviors. As no two programs use the exact same educational and behavioural techniques, it is very difficult to compare programs. As previously mentioned, the environmental scan found on the Canadian Obesity Network (n. d.) website identifies many programs addressing pediatric obesity with mandatory parental involvement offered across Canada. A literature search, however, did not provide published studies to allow for a comparison of how these programs affect caregiver nutrition knowledge and attitude changes. Although these programs are likely to be involved in program

evaluation, the results have not necessarily been published which makes it difficult to determine if the results in this current study have been found elsewhere.

Study Limitations

It is to be expected that limitations will exist with any study, and this study is not an exception. The small sample size prohibits the results of this study to be generalized outside the study population. Factors that contributed to the sample size include the small number of families and, therefore caregivers, attending any one series of the family group education sessions of the FLP as well as the limited number of times the family group education sessions were offered over one year. The requirement of the participants to complete the final survey on their own time and return it in the envelope provided may also have affected the final sample size.

Given that the final sample size is half the original sample size at Time 1, how do we know if the participants who dropped out of the program would have answered the survey questions in the same way than those who continued with the FLP? Although this drop-out rate appears quite high, a review of the literature finds comparable attrition rates of 20% (Suskind et al., 1993), 32.9% (Kitscha et al., 2009), and 55% (Levine et al., 2001; Zeller, 2004) reported in pediatric obesity treatment programs. To determine how this study attrition rate relates to the other fifteen programs from the Canadian Obesity Network environmental scan (n. d.), the programs were contacted by email. Five of the programs, including one that does not measure attrition rates (V. A. Pelletier,

Pediatrician with CN/CP, personal communication, October 26, 2009), responded with reports of 15% (P. Geoffroy, Physician with FWMC, personal communication, October 26, 2009), 19% (K. Watson-Jarvis, Coordinator of MIH, personal communication, October 26, 2009), 13-33% (A. Cristall, Coordinator with CHW, personal communication, October 26, 2009) and 30-40% attrition (G. Ball, Director of PCWH, personal communication, October 26, 2009). The study attrition rates therefore appear to be consistent with similar programs in certain Canadian cities. Factors potentially affecting the FLP attrition rates during this study include weather (extreme weather conditions are not unusual in Winnipeg), illness within the family, caregiver work schedules, and lack of motivation and engagement, by 13–15 year old participants, in particular. It is difficult to assess whether the use of gift certificates to encourage participant retention between Time 2 and Time 3 was effective. The sample size did continue to diminish between these two time periods, but the 19% (four participants) who did drop out was less than the previous 38% (13 participants) who did so between Time 1 and Time 2. Would the drop out rate have been higher without using the gift certificates? That is difficult to determine, but so is inquiring as to whether the rate would have been affected at all if no gift certificates were used.

Could program design have an effect on participant retention? There are factors that are outside of the program facilitators' control, such as weather, but factors such as the day of the week, time of the day, and season of the year may all impact participant recruitment and retention. Other aspects of the program design that could be explored are assessing the readiness to change of the

children and adolescents, and not just the caregivers who become involved, the overall number of intervention sessions, and the timing of the intervention sessions.

The survey instrument was not a validated tool. Although this unique survey matches well with FLP specific requirements for content and length of time for completion, its reliability within this study population has yet to be verified, which affects whether this study could be reproduced with similar results.

Including varying the degrees of difficulty among the knowledge questions would be a strategy to potentially minimize the ceiling effect amongst the nutrition knowledge responses. Minimizing this effect could allow the researcher to demonstrate a greater impact made throughout the intervention with regards to nutrition knowledge.

Recommendations for Future Research and Practice

Knowledge can be a necessary precursor to behaviour change (Reynolds et al., 2008) and the caregivers who participated in this study appear to have good nutrition knowledge related to the specific nutrition content of the FLP. Based on the education model, consideration should be given to modifying the program design. Knowledge may not need to be a key focus, but rather maximizing the best use of the various educational strategies related to behaviour change, such as the TTM, MI, goal setting, self-monitoring and problem solving. Assisting caregivers to translate knowledge into making and sustaining positive healthy eating and regular physical activity behaviour changes

to enable these caregivers to support the same process within their family units should be explored.

Continued exploration of the knowledge and attitude changes of caregivers attending family-based pediatric weight management programs is necessary for the continual adaptation of best practices in the field. Future research should consider using a mixed-methodology, including both quantitative and qualitative approaches, to explore the caregivers' experiences of attending the family group education sessions. Another aspect to add to this exploratory research is determining whether the caregivers and/or children and adolescents make healthy lifestyle behaviour changes as a result of attending the family group education sessions of the FLP. Providing literature to support specific strategies to help families maintain lifelong healthy behaviours is necessary in combating the issue of pediatric overweight and obesity. Exploratory research is also recommended to determine which program design concepts encourage families to complete programs versus those design concepts that may prevent other families from completing pediatric obesity treatment programs is also warranted.

Using educational strategies that take the information and behaviors out of the classroom and into "real life" contexts should be explored. These "real life" contexts may permit the internalization in a more wholistic manner. For example, shopping in supermarkets, reading food labels off the shelf, using cooking demonstrations to explore food textures and serving amounts rather than abstracting the information from paper and pencil activities or models.

Grouping families into family group education sessions based on their Stage of Change may also be beneficial. The current process assumes that families in the Precontemplation Stage are screened out, as they would not contact the program for further information, and register for participation. However, the subsequent groups that are formed may include families who may be in several different Stages of Change. If the program was to consider forming groups of families who are all within the same stage, it may provide further support among the group members than the facilitators are unable to provide. This process may better assist the families in progressing towards the Action and Maintenance stages for those in either the Contemplation or Preparation stages. For those families within the Action or Maintenance stages, the experiences and support of the other families may better assist them to maintain their behaviours and prevent relapse into an earlier stage.

Making, supporting and maintaining any behaviour change within the family unit depends greatly on the parenting styles of the caregivers. The program design strategies discussed for this program and study can be embraced and enhanced within the family unit by the parents, or just as likely, condescended and ignored. From a program design perspective, incorporating these principles of behaviour change within the family context should not only be explored within the framework of a pediatric obesity program, but also within education programs focused on enhancing parenting skills.

If this study were to be replicated, consideration should be given to conducting this study over a longer timeframe. This would allow for a larger

sample size, and therefore more generalizable findings. Perhaps collecting data over a one year timeframe, as opposed to the six-month timeframe described in this study, would allow for a more substantive sample size. Also, if more series of the family group education sessions are run throughout the year, a larger pool of potential study participants would be available to increase the size of the convenience sample.

Another strategy to increase the ability to make generalizable statements involves ensuring the collection of consistent, reliable, and valid data. This process can be accomplished by testing the survey instrument for reliability and validity. Reliability could be tested by having a group of approximately 30 caregivers of children and adolescents between the ages of eight and 15 years complete the survey twice, approximately one month apart. The more similar the results between the two time periods, the greater the test-retest reliability. To ensure the attitude questions of the survey truly measure the traits expecting to be measured, and to ensure construct validity of the data, several strategies could be considered. The study participants could be brought together in a focus group setting, and asked several questions similar to those in the survey, to assess if similar responses are observed. Using data from the final evaluations completed by the caregivers could also be correlated to the responses from the surveys. For instance, if client satisfaction is rated high by the caregivers completing the family group education session evaluation forms, and positive responses (or an increase in positive responses) were evident from the survey, the data from the survey would be considered to have construct validity.

Conclusions and Summary

This study demonstrated that the caregivers who participated in the FLP had good basic nutrition knowledge before initiating the family group education sessions. They believe that nutrition is important. They demonstrated an increase in how often they consciously think about eating healthfully. The family group education sessions appear to have assisted the caregivers apply their knowledge, by providing practical tips and tailored applications, to improve their confidence with following healthy eating principles and in role modelling these behaviours to their family members. Although limited information is available to determine the entire impact made on caregivers, some positive outcomes of the family group education sessions of the FLP were evident in the understanding and use of practical tools to provide healthy foods within the family unit. Further program evaluation is required for continual program quality assurance.

In a practical context, these results suggest that educators of programs with small and short interventions should appreciate small changes in nutrition knowledge as a successful program outcome, but consideration should be given to decrease the potential of a ceiling effect. It is also important for those educators to recognize that knowledge may not be how the largest impact of the program can be demonstrated. Exploring program design concepts to allow educational programs to assist caregivers in effecting change, in making and maintaining changes to their own and their family's lifestyle choices is important. This process may be most successful when incorporating experiential learning activities throughout the educational intervention, and potentially taking the

learning out of the boardroom, and into the “real world” environments that family members struggle in daily to make healthy choices. The ideal educational situation would include a high level of commitment from the families, including each family member, and would allow for frequent, but flexible contact with those families, in both individual and small group educational settings.

Despite the questions raised by this study, and the need for further research, one thing is clear – the issue of pediatric obesity is not going away. Treating and preventing pediatric obesity has the potential to improve the life of individuals, families, communities, and societies. Individuals and families could become happier and healthier. From an economic perspective, the healthcare system does not have to become overwhelmed. There is a tremendous potential cost savings from not having to treat an increased number of individuals with conditions related to obesity, such as cardiovascular disease, diabetes, kidney disease, cancers, and knee joint replacements. Future generations would not need to worry about their lifespan being shorter than that of their parents, and could become more productive members of society. So, who should care about the issue of pediatric obesity and finding successful strategies to combat it? Everyone.

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APPENDIX A Green, Yellow, Red Lesson Plan (8-12 year olds)

Green, Yellow, Red

Goal: To introduce a food classification system to allow kids and parents to choose foods within moderation.

Objectives	Content	Learning Activity	Time frame
After completing this session, the learner will be able to: 1. Identify GREEN food choices as everyday, YELLOW as no more than twice per week, and RED as not regulary.	•Hold up bags to look like a traffic light. Ask participants what it looks like/reminds them of. •Ask participants what the colours of the traffic light mean •Ask participants what the colours would mean if we thought of foods as Green, Yellow or Red Green – GO – great choice always for a meal or snack Yellow – SLOW – foods that have important nutrients to keep our bodies healthy, but if eaten too often, can make our bodies unhealthy. 2X/week Red – WHOA – foods that can make our body unhealthy if eaten often.	Discussion/ brainstorm	2 min
2. Differentiate between GREEN, YELLOW and RED choices within each food group.	•Place each of the coloured bags across the table, about 1 ½ feet from end. •Ask everyone to push their chairs back from table to allow for space. •Have parents remain in their chairs. Ask kids to stand up. •Encourage kids to choose an item from the table, bring it to the end of the table, and place it in front of the coloured bag they think it belongs to. •Kids can work in groups or individually. •Once all items are taken from the middle of the table, ask kids to take their seats. • Review items placed in each category • Ask if anyone would like to move any items (can include parents). • Once items are moved around, thank everyone for their participation. Move any items to proper categories. Ask participants how they decided which foods belonged where, and discuss. GREEN choices – low in fat, sugar and salt and high in fibre (if possible) and overall nutrients. -fruits and vegetables, whole grains, skim, 1% or choc. milk and yogurt, lean meats and alternatives YELLOW choices – lacking fibre and/or high in fat. -juice (1/2 cup a day okay), cheese, peanut butter, refined grains low in sugar RED choices – high in sugar, salt and/or fat and lacking in overall nutrients. -sugared cereals, donuts, pastries, chips, ice cream, hot dogs, pizza pops, fish sticks, chicken fingers, sausages, bacon, fried foods, pop	Interactive Game Discussion Handout: What's Goin' in Your Mouth?	6 min 8 min
3. Be challenged to be positive role models (parents) by purchasing and providing to their families mostly GREEN foods, some YELLOW foods and infrequently RED foods.	Take a look in your refrigerator, and pantry and inventory the number of non-GREEN food choices. RED choices should not be in the home all the time. Encourage all family members to drink milk at meals and water between meals.	Discussion Reference: Your Child's Weight: Helping Without Harming by Ellyn Satter	2 min

APPENDIX B Green, Yellow Red Participant Handout

What's Going in Your Mouth?
It's YOUR CHOICE

GREEN FOODS

Eat these foods for meals and snacks – 'everyday' foods

Examples:

All fruit	All vegetables	Whole grain bread
Oatmeal	Brown rice	Yogurt
Brown pasta	Salmon/Tuna	Lean meats
Beans	Water	Skim & 1% milk
Chocolate milk	Breakfast cereals with fiber	

YELLOW FOODS

Eat these foods no more than 2 times a week

Examples:

White bread	Cheese	White rice
Rye bread	Peanut butter	White pasta
2% milk	Granola bars	Eggs

RED FOODS

Eat these foods 2 or 3 times a month – 'sometimes' foods

Examples:

Cake	Cookies	French fries
Donuts	Chocolate	Slurpees
Soft drinks	Hot dogs	Ice cream
Chips	Pizza pops	Sausages
Bacon	Chicken fingers	

APPENDIX C Beverages Lesson Plan (13-15 year olds)

Beverages

Goal: To create awareness of the non-nutritive value of many of the beverages available.

Objectives	Content	Learning Activity	Time frame
After completing this session, the learner will be able to: 1. Identify GREEN drink choices as water and milk and the importance of both these drinks.	Ask participants what drink choices provide nutritional value to our bodies? Discuss that milk contains calcium and vitamin D to keep our bones healthy and strong; protein to help provide fullness and build/rebuild muscles; Discuss how our bodies are made up of 60-75% water and the need for us to keep replenishing the water we lose through everyday activities – going to the bathroom, sweating, etc. If we feel thirsty our body is already dehydrated – the best choice when we're thirsty is water.	Discussion/ brainstorm	4 min
2. Differentiate between juice and drinks, punches, beverages and cocktails. 3. Recognize that drinks that contain sugar should not be consumed regularly.	Demonstrate with bags of sugar, the content of several popular drink choices: - juicebox = 6 tsp - small slurpee = 8 tsp - can Coke, bottle iced tea, can apple juice = 10 tsp sugar - cranberry drink = 12 tsp sugar - Sunny D bottle = 15 tsp sugar - 40 oz slurpee = 25 tsp - 1.8L big gulp = 47 Discuss juice appropriate if half a cup per day or less. If larger amount, less often. Fruit is always a healthier choice because of the fibre content - will help fill you up. Every body NEEDS fruit. Our bodies DON'T NEED juice. Any of the other choices above – body gets no nutritional value – okay occasionally, but watch portion size.	Drink samples and matching bags of sugar	6 min
4. Recognize that several popular drinks if consumed often, can contribute to excessive caffeine, fat and are unhealthy.	Demonstrate with bags of, sugar and fat samples the content of popular drink choices and discuss that there can be many hidden things that contribute to calories, but not nutrition in our drink choices. Sports drinks – designed for vigorous activity sustained over 1 hour Energy drinks – increase wakefulness by caffeine content Need to consider freq, size and healthier choices – milk instead of cream, no whip,	Drink samples and matching sugar, fat and caffeine contents	6 min
5. Be challenged to be positive role models (parents) by purchasing and providing to their families mostly GREEN beverages, and to have RED beverages available only occasionally.	Take a look in your refrigerator, and pantry and inventory the number of non-GREEN drink choices. RED choices should not be in the home all the time. Encourage all family members to drink milk at meals and water between meals.	Discussion	4 min

Appendix D ENREB Approval Certificate

APPROVAL CERTIFICATE

20 December 2007

TO: **Marni McFadden** (Advisor M. Atleo)
Principal Investigator

FROM: XXXXX
Education/Nursing Research Ethics Board (ENREB)

Re: **Protocol #E2007:069**
"Parent and Child Knowledge and Behaviour Change in a Pediatric Obesity Program"

Please be advised that your above-referenced protocol has received human ethics approval by the **Education/Nursing Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement**.** This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- **if you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to Kathryn Bartmanovich, Research Grants & Contract Services (fax 261-0325), <u>including the Sponsor name</u>, before your account can be opened.**

- **if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.**

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/ors/ethics/ors_ethics_human_REB_forms_guidelines.html**) in order to be in compliance with Tri-Council Guidelines.**

Appendix E ENREB Amendment Approval

UNIVERSITY OF MANITOBA | OFFICE OF RESEARCH SERVICES
Office of the Vice-President (Research)

CTC Building
208 - 194 Dafoe Road
Winnipeg, MB R3T 2N2
Fax (204) 269-7173
www.umanitoba.ca/research

AMENDMENT APPROVAL

06 October 2008

TO: **Marni McFadden**
Principal Investigator

FROM:
Education/Nursing Research ~~Ethics Board~~ (ENREB)

Re: **Protocol #E2007:069**
"Parent and Child Knowledge and Behaviour Change in a Pediatric Obesity Program"

This will acknowledge your e-mail dated October 1, 2008 requesting amendment to your above-noted protocol.

Approval is given for this amendment. Any further changes to the protocol must be reported to the Human Ethics Secretariat in advance of implementation.

Bringing Research to Life

Appendix F ENREB Renewal Approval

UNIVERSITY OF MANITOBA | OFFICE OF RESEARCH SERVICES
Office of the Vice-President (Research)

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RENEWAL APPROVAL

11 February 2009

TO: **Marni McFadden**
Principal Investigator

FROM:
Education/Nursing Research Ethics Board (ENREB)

Re: **Protocol #E2007:069**
"Parent and Child Knowledge and Behaviour Change in a Pediatric Obesity Program"

Please be advised that your above-referenced protocol has received approval for renewal by the **Education/Nursing Research Ethics Board**. This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Bringing Research to Life

Appendix G ENREB Second Amendment Approval

UNIVERSITY OF MANITOBA | OFFICE OF RESEARCH SERVICES
Office of the Vice-President (Research)

CTC Building
208 - 194 Dafoe Road
Winnipeg, MB R3T 2N2
Fax (204) 269-7173
www.umanitoba.ca/research

AMENDMENT APPROVAL

11 February 2009

TO: **Marni McFadden**
Principal Investigator

FROM:
Education/Nursing Research Ethics Board (ENREB)

Re: **Protocol #E2007:069**
"Parent and Child Knowledge and Behaviour Change in a Pediatric Obesity Program"

This will acknowledge your e-mail dated February 10, 2009 requesting amendment to your above-noted protocol.

Approval is given for this amendment. Any further changes to the protocol must be reported to the Human Ethics Secretariat in advance of implementation.

Appendix H WRHA RRC Approval

Winnipeg Regional Health Authority
Caring for Health

Office régional de la santé de Winnipeg
À l'écoute de notre sante

1800 - 155 Carlton St.
Winnipeg, Manitoba
R3C 4Y1 CANADA
TEL: 204/926.7000
FAX: 204/926.7007
www.wrha.mb.ca

155, rue Carlton, suite 1800
Winnipeg, Manitoba
R3C 4Y1 CANADA
TEL: 204/926.7000
TELEC 204/926.7007
www.wrha.mb.ca

September 23, 2008

Marni McFadden
300-287 Broadway Avenue
Winnipeg, MB R3C 0R9

Dear Marni:

Re: Proposal "Healthy Eating Knowledge and Attitudes of Caregivers Attending a Family-Based Pediatric Obesity Program" WRHA Reference No: 2007-049

We are pleased to inform you that your research access request for the above-named study has been approved by the Winnipeg Regional Health Authority (WRHA) Research Review Committee pending confirmation that the following conditions are met or agreed to:

- An updated approval by the Ethics Board of your Resubmission board is submitted.
- You, your co-investigators, and your research assistants comply with the relevant privacy legislation as indicated below.
  - ☒ *The Personal Health Information Act*
  - [X] *The Freedom of Information and Protection of Privacy Act*
  - ☐ *The Personal Health Information Act* and *The Freedom of Information and Protection of Privacy Act*
- You complete and return the attached Confidentiality Agreement(s) to [redacted], WRHA, 1800 – 155 Carlton Street, Winnipeg, MB R3C 4Y1;
- You submit to our attention any significant changes in your proposal prior to implementation or any significant changes during the course of the study;
- You submit a summary of the final results of the study to the WRHA and provide us with a copy of any publications arising from the study;
- It is an expected courtesy that WRHA will be given a minimum of five working days advance notice of publication or presentation of results with policy implications, in order to be prepared for public response;
- You agree to be accountable for appropriate storage and elimination of material.

Thank you for selecting the Winnipeg Regional Health Authority as the site to conduct your research. Please let us know should you encounter any site-related difficulties during the course of your study.

We extend best wishes for successful completion of your study.

Sincerely,

Executive Director, Division of Research and Applied Learning
Chair, Research Review Committee
Winnipeg Regional Health Authority

cc.

Encl: ***FIPPA Agreement***

Appendix I Recruitment Phone Call Script

UNIVERSITY
OF MANITOBA

Script for Participant Recruitment Phone Call

This is Marni McFadden calling, the dietitian working with the Family Lifestyles Program. Thank you for registering with the Family Lifestyles Program. We look forward to your participation. I'm phoning to let you know that I am also a graduate student in the Department of Educational Administration, Foundations & Psychology at the University of Manitoba. I am doing a study with the parents/caregivers who attend the Family Lifestyles Program and am inviting you to participate.

The purpose of the study is to see if there is a change in knowledge and/or attitudes about healthy eating among the caregivers who complete the program.

The benefits of study are:

1) To see if the nutrition curriculum of the Family Lifestyles Program group sessions meets its planned outcomes.
2) To find if changes (improvements) are needed to the Family Lifestyles Program group nutrition curriculum.

In order to participate in this study you and your family must attend the group sessions of the Family Lifestyles Program, which you are already registered for, and fill out a survey at two time periods: the beginning of the first session, and at the end of the last session. The survey has 26 questions, there is only one answer per question, and will take 10 minutes to complete.

Some other important details that I need to tell you about are:

- You may ask any questions you want about the study. The researcher (which is me) must answer to your satisfaction. Any time you have a question, phone or email me or my advisor, or ask me in person.
- Your name will not be connected to your answers and will be kept private.
- If you decide not to take part in this study, you can still take part in the Family Lifestyles Program without any problems.

- You do not have to answer all of the questions asked. You may withdraw consent and end the process at any time. Doing so will not negatively affect your taking part in the Family Lifestyles Program.
- There are no monetary benefits to you, your family, or others in this study. The knowledge gained through this study will help improve services offered by the program.
- You will get a copy of the main findings of the study when it is finished.

If you have any questions about this project, please contact the researchers:

Marni McFadden, R.D.
M.Sc. Candidate
University of Manitoba
Dept. of Administration, Foundations & Psychology
287 Broadway
Winnipeg, MB, R3C 0R9
Office: (XXX) XXX-XXXX
Email: XXXXX

Dr. Marlene Atleo, Ph.D.
Assistant Professor
University of Manitoba
Dept. of Administration, Foundations, & Psychology
214 Education Bldg
Winnipeg, MB, R3T 2N2
Office: (XXX) XXX-XXXX
Email: XXXXX

This study has been approved by the University of Manitoba Human Ethics Research Board. If you have any questions about your rights as a participant in this survey you may contact:

The Human Ethics Secretariat
Office: (XXX) XXX-XXXX Email: XXXXX

If you are interested in participating, I can mail you out a consent form that provides all the information I just told you. If you want to participate, please bring it with you to your first group session, where you and I can both sign it. Thanks so much for your time.

Appendix J Informed Consent Form

UNIVERSITY
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Informed Consent

Research Project Title: Changes in healthy eating knowledge and attitudes of caregivers attending a family-based pediatric obesity program.

Researcher: Marni McFadden, Master of Education candidate, University of Manitoba

The purpose of this study is to determine if caregivers' nutrition knowledge increases and/or their attitudes about nutrition changes after attending group education sessions of the Family Lifestyles Program. This study is part of the requirements for obtaining a Masters Degree in Education.

The benefits of this study are:

1. To see if the Family Lifestyles Program group nutrition curriculum meets its planned outcomes, and
2. To find if changes (improvements) are needed to the Family Lifestyles Program group nutrition curriculum.

Taking part in this study requires you to attend the Family Lifestyles Program group sessions. All sessions are held at 287 Broadway, on the third floor, and you may need to miss work or school to attend these sessions. All five sessions will be held on a weekday evening, the first four over four consecutive weeks, and the final session one month after the fourth session. All sessions are 60 minutes in length. To take part in this study you must also fill out a survey, consisting of the same questions, at the start of the first session, at the fourth group session, and at the end of the final sessions. The survey has 26 formatted questions and will require 10 minutes to complete.

Your answers to the survey questions will be combined with answers from all other participants. All answers will be kept confidential and anonymous. To match your answers from the first and second survey, you will be assigned a random three digit code. Once all surveys have been completed, and the data analyzed, the surveys and master list will be locked in a cabinet in a locked room (room 338, 3rd floor, 287 Broadway) that is accessible to the researcher only. The surveys will be destroyed within five years or one year after initial publication of the information, whichever comes first.

Whether you decide to participate or not, it will not interfere with the services provided to you and your family. If you decide not to take part in this study you can still, without penalty, take part in the Family Lifestyles Program. If you decide to take part in this study, but at a later date wish to stop, you can do so at any time without any problems. Stopping the study will not affect you and your family taking part in the Family Lifestyles Program. At any time, if you do not wish to take part in the study, please let

the researcher know to ensure you won't be included in the research component, but also to ensure your program services will not be interrupted. You can also choose to refrain from answering any questions you do not feel comfortable answering, without consequences.

No payment of any kind will be given for taking part in this study. Data from this study will be published as a Masters thesis, and may be published in a professional journal or presented at a conference. The data will not be given to study participants unless requested. If you wish to receive a copy of the results please provide your contact information:

_____

_____

_____

_____

If you have any questions about this project, please contact the researchers:

Marni McFadden, R.D.
M.Sc. Candidate
University of Manitoba
Dept. of Administration, Foundations & Psychology
287 Broadway
Winnipeg, MB, R3C 0R9
Office: (XXX) XXX-XXXX
Email: XXXXXX

Dr. Marlene Atleo, Ph.D.
Assistant Professor
University of Manitoba
Dept. of Administration, Foundations, & Psychology
214 Education Bldg
Winnipeg, MB, R3T 2N2
Office: (XXX) XXX-XXXX
Email: XXXXXX

This research has been approved by the Education/Nursing Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at XXX-XXXX, or e-mail XXXXXX. A copy of this consent form has been given to you to keep for your records and reference.

_____

Participant's Signature Date

_____

Researcher and/or Delegate's Signature Date

Unique Code: _____

UNIVERSITY
OF MANITOBA

Family Lifestyles Program
Nutrition Knowledge and Attitudes
Caregiver Survey

First Name: _____

Last Name: _____

Date: _____

1. Are you a:
   a) Male
   b) Female

2. You are attending this program as a (check all that apply):
   a) Parent
   b) Aunt/Uncle
   c) Grandparent
   d) Legal guardian
   e) Other: please specify: _____

Unique Code: _____

Family Lifestyles Program
Caregiver Nutrition Knowledge and Attitudes

Pre-Session Survey

Please complete this survey by yourself by circling one correct answer. Your answers will remain confidential and your name will be detached from this survey so you remain anonymous.

3. What is the healthiest choice for every day:
   a. Fruit beverage
   b. Fruit drink
   c. Fruit juice
   d. Fruit punch

4. What is the healthiest choice for every day:
   a. French bread
   b. Rye bread
   c. White bread
   d. Whole Wheat bread

5. What is the healthiest choice for every day:
   a. Fruit cup / Canned fruit
   b. Fruit leather
   c. Fruit roll-up
   b. Fruit snacks

6. What is the healthiest choice for every day:
   a. Milkshake
   b. Whole (homo) milk
   c. 1 % milk
   d. 2 % milk

7. What is the healthiest choice for every day:
   a. Baked chicken
   b. Chicken fingers
   c. Chicken nuggets
   d. Fried Chicken

8. Which food group do you and your child/adolescent need to eat the most servings of:
   a. Grain Products
   b. Meat and Alternatives
   c. Milk and Alternatives
   d. Vegetables and Fruits

9. Which food group do you and your child/adolescent need to eat the least servings of:
   a. Grain Products
   b. Meat and Alternatives
   c. Milk and Alternatives
   d. Vegetables and Fruits

10. Which drink is healthy to have in large amounts (more than 4 glasses per day):
    a. Juice
    b. Milk
    c. Soft drinks
    d. Water

11. Which drink contains calcium and vitamin D:
    a. Juice
    b. Milk
    c. Soft drinks
    d. Water

12. A balanced diet has:
    a. Mostly a high amount of protein
    b. Mostly a low amount of fat
    c. Mostly a low amount of carbohydrates
    d. All nutrients in recommended amounts

13. Whole grains are recommended in the diet because they:
    a. Are high in starch
    b. Contain fibre
    c. Contain vitamins
    d. All of the above

14. Healthy eating means never eating foods high in fat or sugar:
    a. True
    b. False

For each of the next 10 statements, please indicate how you feel about the statement by circling one answer. You may strongly agree, agree, be neutral, disagree, or strongly disagree about the statement.

15. People of all ages should be concerned about eating healthy diets.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

16. Nutrition is not that important.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

17. Overall, I think my child/adolescent eats about the right amount of food.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

18. I am concerned my child/adolescent is not eating well.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

19. I don't need to change my diet as it is healthy enough.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

20. The nutrition information on food labels is useful to me.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

21. I feel confident that I know how to use food labels to choose a healthy diet.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

22. When I use food labels I make better food choices.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

23. I feel confident that I know how to plan healthy meals.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

Unique Code: _____

24. I don't feel I have time to plan meals.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

For the next 2 statements, please answer how often you agree with the statement. You may agree with the statement most of the time, quite often, now and again, or hardly ever.

25. I make conscious efforts to try to eat a healthy diet.
    a. Most of the time
    b. Quite often
    c. Now and again
    d. Hardly ever

26. I make conscious efforts to provide healthy foods to my family.
    a. Most of the time
    b. Quite often
    c. Now and again
    d. Hardly ever

Thank you for filling out this survey

Unique Code: _____

UNIVERSITY OF MANITOBA

Family Lifestyles Program
Nutrition Knowledge and Attitudes
Caregiver Survey

First Name: _____

Last Name: _____

Date: _____

1. Did you attend all 4 group sessions?
   a. Yes
   b. No

2. If no, which session(s) did you miss?
   a. Green, Yellow, Red foods
   b. Drink/beverage choices
   c. Meal planning & label reading
   d. Eating out

Family Lifestyles Program
Caregiver Nutrition Knowledge and Attitudes

Post-Session Survey

Please complete this survey by yourself by circling one correct answer. Your answers will remain confidential and your name will be detached from this survey so you remain anonymous.

3. What is the healthiest choice for every day:
   a. Fruit beverage
   b. Fruit drink
   c. Fruit juice
   d. Fruit punch

4. What is the healthiest choice for every day:
   a. French bread
   b. Rye bread
   c. White bread
   d. Whole Wheat bread

5. What is the healthiest choice for every day:
   a. Fruit cup / Canned fruit
   b. Fruit leather
   c. Fruit roll-up
   b. Fruit snacks

6. What is the healthiest choice for every day:
   a. Milkshake
   b. Whole (homo) milk
   c. 1 % milk
   d. 2 % milk

Unique Code: _____

7. What is the healthiest choice for every day:
   a. Baked chicken
   b. Chicken fingers
   c. Chicken nuggets
   d. Fried Chicken

8. Which food group do you and your child/adolescent need to eat the most servings of:
   a. Grain Products
   b. Meat and Alternatives
   c. Milk and Alternatives
   d. Vegetables and Fruits

9. Which food group do you and your child/adolescent need to eat the least servings of:
   a. Grain Products
   b. Meat and Alternatives
   c. Milk and Alternatives
   d. Vegetables and Fruits

10. Which drink is healthy to have in large amounts (more than 4 glasses per day):
    a. Juice
    b. Milk
    c. Soft drinks
    d. Water

11. Which drink contains calcium and vitamin D:
    a. Juice
    b. Milk
    c. Soft drinks
    d. Water

Unique Code: _____

12. A balanced diet has:
    a. Mostly a high amount of protein
    b. Mostly a low amount of fat
    c. Mostly a low amount of carbohydrates
    d. All nutrients in recommended amounts

13. Whole grains are recommended in the diet because they:
    a. Are high in starch
    b. Contain fibre
    c. Contain vitamins
    d. All of the above

14. Healthy eating means never eating foods high in fat or sugar:
    a. True
    b. False

For each of the next 10 statements, please indicate how you feel about the statement by circling one answer. You may strongly agree, agree, be neutral, disagree, or strongly disagree about the statement.

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    d. Disagree
    e. Strongly disagree

Unique Code: _____

16. Nutrition is not that important.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

17. Overall, I think my child/adolescent eats about the right amount of food.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

18. I am concerned my child/adolescent is not eating well.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

19. I don't need to change my diet as it is healthy enough.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

Unique Code: _____

20. The nutrition information on food labels is useful to me.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

21. I feel confident that I know how to use food labels to choose a healthy diet.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

22. When I use food labels I make better food choices.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

23. I feel confident that I know how to plan healthy meals.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

Unique Code: _____

24. I don't feel I have time to plan meals.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

For the next 2 statements, please answer how often you agree with the statement. You may agree with the statement most of the time, quite often, now and again, or hardly ever.

25. I make conscious efforts to try to eat a healthy diet.
    a. Most of the time
    b. Quite often
    c. Now and again
    d. Hardly ever

26. I make conscious efforts to provide healthy foods to my family.
    a. Most of the time
    b. Quite often
    c. Now and again
    d. Hardly ever

Thank you for filling out this survey