Factors Related to Women's Experiences and Satisfaction with Prenatal Care

by

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Abstract

Prenatal care provides numerous maternal and infant health benefits, and it is more likely to be effective if women begin receiving care early and continue their care throughout pregnancy. Patient satisfaction is recognized as a predictor of adherence to medical recommendations and utilization of care. The purpose of this study was to identify the factors associated with pregnant women's satisfaction with prenatal care in Winnipeg. A cross-sectional, descriptive, correlational design was used to examine the relationships between expectations, interpersonal processes of care, the quality of prenatal care, personal characteristics, and the type of provider with overall satisfaction, as well as with satisfaction with each of the following dimensions: information, provider care, staff interest, and system characteristics. Donabedian's (2003) structure, process, and outcome framework guided the study. A convenience sample of 216 pregnant women from diverse socioeconomic backgrounds was surveyed using self-administered questionnaires in late third trimester; providers were obstetricians (58.2%), midwives (15.9%), family physicians (13.9%), nurse practitioners (4.8%), or mixed (7.2%). Multiple linear regression analyses were used to identify predictors of satisfaction. Perceived quality of care was a significant predictor of overall satisfaction and all the satisfaction subscales. The provider's interpersonal style was a significant predictor in all but one of the satisfaction measures, satisfaction with information, where patient-centered decision-making was significant. The type of prenatal care provider (midwife) was a predictor of satisfaction with system characteristics. Expectations for prenatal care were unrelated to satisfaction. Although most of the participants in this study were

satisfied with prenatal care, 5-20% reported dissatisfaction with various dimensions. The findings of this study have implications for future research, practice, education and policy. Important information on structure and process was generated, with the potential to improve the experience and satisfaction of women receiving prenatal care.

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Chapter I: Introduction

This chapter highlights the relevant background related to the study, and discusses why knowledge of the factors associated with women's experiences and satisfaction with prenatal care was important. The purpose of the study is outlined, and the conceptual framework that guided the study is presented. The research questions are identified, followed by a definition of terms, and then there is a discussion on the significance of the study.

Prenatal care has become a widely used, if not the most used, preventive health service in North America. In addition, there is wide public acceptance of prenatal care as a vital and important part of a healthy pregnancy (Alexander & Kotelchuck, 2001; Moos, 2006). The lack of prenatal care has been associated with infant and maternal mortality (American College of Obstetricians and Gynecologists, 2007). There is substantial observational evidence that prenatal care provides numerous maternal and infant health benefits (Alexander & Kotelchuck, 2001). The United States (U.S.) Department of Health and Human Services (2000) proposes that timely and good quality prenatal care can help to prevent poor birth outcomes and improve maternal health. Prenatal care is more likely to be effective if women begin receiving care early and continue prenatal care throughout pregnancy, according to accepted standards of periodicity (U.S. Department of Health and Human Services, 2000).

In a recent population-based study in Manitoba, inadequate prenatal care was associated with adverse fetal-infant and maternal outcomes including: higher rates of stillbirth, low birth weight, small for gestational age, preterm birth, maternal postpartum

depression/anxiety, short inter-pregnancy intervals, and lower rates of breastfeeding initiation and of immunization at 1 year of age (Heaman, Martens, et al., 2012). In an earlier study, Heaman, Blanchard, Gupton, Moffatt, and Currie (2005) found that inadequate prenatal care was associated with more than double the likelihood of preterm birth after controlling for other risk factors.

Although prenatal care is a modifiable risk factor for adverse pregnancy outcomes, little attention has been directed toward the system and process variables that influence the receipt of care, including satisfaction, availability, accessibility, acceptability, affordability, types and mix of providers, continuity, comprehensiveness, and cultural competence (Alexander & Kotelchuck, 2001). It is critical that these system and process variables be examined, particularly as providers and health service planners strive to develop new and innovative models of prenatal care in the face of potential human resource shortages in health (Canadian Institute for Health Information [CIHI], 2004) and observed health inequities (Heaman et al., 2010).

Satisfaction has long been recognized as a predictor of adherence to medical recommendations and utilization (Aharony & Strasser, 1993; Thomas & Penchansky, 1984; Zastowny, Roghmann, & Cafferata, 1989; Ware, Wright, Snyder, & Chu, 1975). Patient satisfaction has emerged as a necessary, legitimate, and desirable outcome of health care in its own right (Williams & Wilkinson, 1995). In 2007, Accreditation Canada (2007) introduced a new standards framework made up of four standard areas, including one entitled “Positive Client Experience.” This standard area is tied to the following set of key outcomes: client satisfaction, client perceptions of care received,

and improved client well-being. In addition, maternal satisfaction with prenatal care has been included as part of the measures included in a maternity care minimum data set for the evaluation of models for maternity care in the U.S. (Devane, Begley, Clarke, Horey, & Oboyle, 2007).

Purpose of the Study

The purpose of this study was to identify the factors associated with pregnant women's satisfaction with prenatal care in Winnipeg, Manitoba. This study sought to examine the relationship between personal and pregnancy characteristics, expectations, quality of care, and interpersonal processes of care with overall satisfaction, as well as satisfaction with the following: information, provider care, staff interest, and system characteristics.

Knowledge of the factors related to women's satisfaction with prenatal care may help to improve prenatal care services. As Bowen (2006) identified, it is this consideration of satisfaction as a dependent variable that may yield the most useful information about structure, processes, and outcomes of care, which then can be used to improve the prenatal care for women.

Conceptual Framework

Donabedian's (2003) framework was particularly appropriate to guide this study since the purpose of this study is applied in nature, that is, the findings may be used to improve the delivery of prenatal care and women's satisfaction with prenatal care. In the framework, Donabedian (2003) depicts the components of quality that are considered to be most pertinent at successively more inclusive levels (Figure 1). These components are

represented by a set of concentric semi-circles, at the core of which is the patient-provider interaction. Beyond this core are the care implemented by the patient, the care given by the family, and the care received from the community. The centrality of the interpersonal relationship is consistent with the patient satisfaction literature (Linder-Pelz, 1982a). Donabedian (2003) states, "In fact in many cases, the proper management of the patient-practitioner relationship is in itself the most important technique of care" (p. 20). Linder-Pelz and Struening (1985) found physician conduct to be more important than any other factor in determining satisfaction.

Figure 1. Quality Assessment at Successively More Inclusive Levels

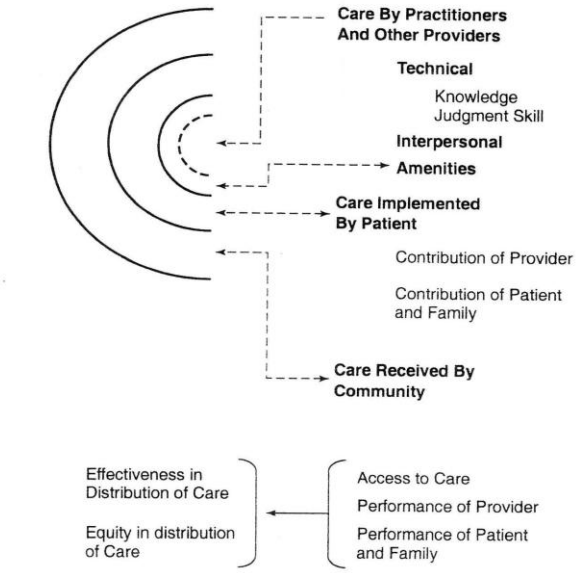

Figure 1. Quality Assessment at Successively More Inclusive Levels. From *An Introduction to Quality Assurance in Health Care* (p. 25), by A. Donabedian, 2003, New York, NY: Oxford University Press. Copyright 2003 by Oxford University Press. Reprinted with permission.

Donabedian's (2003) structure, process, and outcome framework guided the researcher in obtaining information that can be used to make improvements in care. Structure is meant to include the conditions under which care is provided, including material and human resources, and organizational characteristics (Donabedian, 2003). Process is defined as the activities that a provider carries out, focused on interpersonal relationships, and includes contributions to care by patients themselves and their families. Outcome is defined as changes in individuals that can be attributed to health care, including: changes in health status, knowledge, behaviour, and satisfaction with the care received and its outcomes (Donabedian, 2003).

Donabedian (2003) states that in order to make inferences about quality there must be a predetermined relationship among the three approaches (structure, process, and outcome); however, he further states that this linearity is a simplified depiction of a much more complex reality. Effects may themselves become causes to subsequent effects. Donabedian (2003) identifies that the relationship between process and outcome is often imperfectly known since patients vary in their medical, social, and psychological characteristics. These characteristics may influence outcomes either independently of process or by interacting with process. Figure 2 provides a diagrammatic representation of hypothetical relationships between the three approaches.

Figure 2. Hypothetical Relationships: Characteristics of Structure, Process and Outcome

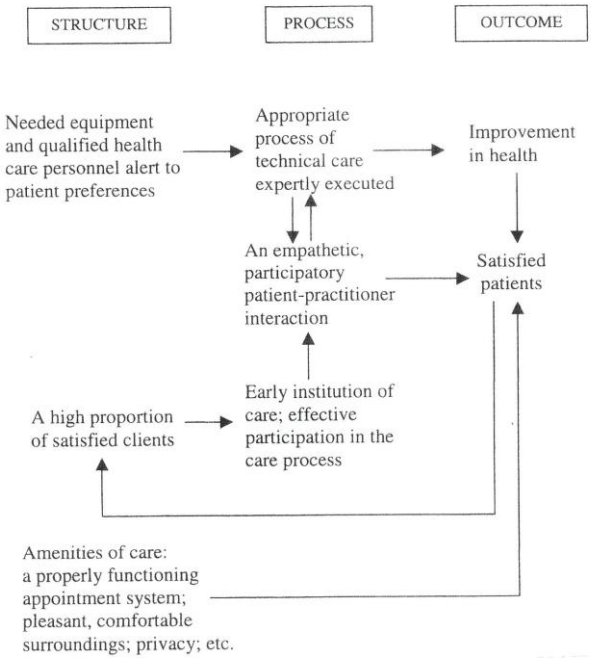

Figure 2. Hypothetical Relationships: Characteristics of Structure, Process. From *An Introduction to Quality Assurance in Health Care* (p. 50), by A. Donabedian, 2003, New York, NY: Oxford University Press. Copyright 2003 by Oxford University Press. Reprinted with permission.

This study examined the relationships between the following independent variables: expectations, perceived quality of prenatal care, and interpersonal processes, with satisfaction as the dependent variable. Socio-demographic and biomedical information related to pregnancy were also measured as Donabedian (2003) identifies that medical, social, and psychological characteristics may influence outcomes either independently of process or by interacting with process.

The relationship between satisfaction and prenatal care utilization was not studied, nor were the relationships between structure, process and health outcomes

studied. These aspects of Donabedian's (2003) framework were not tested in this study as the focus of this study was limited to satisfaction as the outcome of structure and process.

Research Questions

The purpose of this cross-sectional, descriptive, quantitative study was to identify the factors associated with pregnant women's satisfaction with prenatal care in Winnipeg. The three primary research questions were as follows:

1. What are the relationships between pregnant women's expectations of prenatal care, the quality of care received, the interpersonal processes of care and satisfaction?
2. What are the relationships between pregnant women's personal characteristics, perceived stress, the type of prenatal care provider, and satisfaction?
3. What are the most significant predictors of satisfaction with prenatal care?

The four secondary questions were as follows:

4. Are there differences in the personal characteristics of pregnant women receiving care from each type of prenatal care provider (obstetrician, family physician, and midwife)?
5. What are the relationships between pregnant women's personal characteristics, perceived stress, the type of provider, and the interpersonal processes of care?

6. What are the relationships between pregnant women's personal characteristics, perceived stress, the type of provider, and the quality of prenatal care received?
7. What are the relationships between pregnant women's personal characteristics, perceived stress, the type of provider, and the expectations of prenatal care?

Definition of Terms

Several variables were measured in this study. Prenatal care was defined as maternal care involving clinical assessment to identify and reduce potential risks, treat medical conditions, and help women to address behavioural factors associated with poor maternal and infant outcomes (Bennett et al., 2009; U.S. Department of Health and Human Services, 2000).

Expectations of prenatal care were defined as "the pregnant woman's perceptions of prenatal care and the services she expects to receive throughout her pregnancy" (Omar, Schiffman, & Bingham, 2001, p. 140). The Expectations factor of the Prenatal Expectations and Satisfaction with Prenatal Care (PESPC) instrument developed by Omar et al. (2001) was used to measure expectations in this study (Appendix A).

The quality of prenatal care experienced was measured using the Quality of Prenatal Care Questionnaire (QPCQ) developed by Heaman, Sword, Akhtar-Danesh, Bradford, and the QPCQ Research Team (2012). This instrument is made up of 6 subscales: information sharing, anticipatory guidance, sufficient time, approachability, availability, and support and respect (Appendix B).

Interpersonal processes of care were defined as the social and psychological aspects of provider interactions with users; they involve their communication, decision-making, and relational skills (Cleary & McNeil, 1988; Stewart, Napoles-Springer, & Perez-Stable, 1999; Wong, Korenbrot, & Stewart, 2004). The Prenatal Interpersonal Processes of Care (PIPC) developed by Wong et al. (2004) was used to measure interpersonal processes of care. The PIPC (Appendix C) is made up of seven sub-scales within 3 broader dimensions: communication (empowerment/self-care, elicitation of problems /responsiveness, and explanations of processes of care); patient-centered decision-making (one scale); and interpersonal style (friendliness and courteousness, lack of perceived discrimination, and respectfulness/emotional support).

Pregnant women's personal characteristics were defined as socio-demographic variables including: age, education, employment, income, ethnicity, and health status factors related to pregnancy, including parity (number of live born children) and obstetrical risk status. Prenatal care characteristics included the type of provider from whom the woman was receiving her prenatal care, such as an obstetrician, family physician, or midwife. Pregnant women's personal characteristics, pregnancy characteristics, and prenatal care characteristics were measured using a demographic and pregnancy questionnaire (Appendix D).

Perceived stress refers to the extent to which situations in one's life are perceived as stressful (Cohen, Kamarck, & Mermelstein, 1983). Perceived stress was measured using the 4-item version of the Perceived Stress Scale (PSS) in Appendix E; the items

tap the degree to which people find their lives unpredictable, uncontrollable, and overloading (Cohen et al., 1983).

Linder-Pelz and Struening (1985) theorize that patient satisfaction incorporates multiple evaluations of discrete components of health care; as such, the satisfaction factor of the PESPC (Omar et al., 2001), made up of four satisfaction subscales, was used to measure overall satisfaction, as well as satisfaction with information, provider care, staff interest, and system characteristics (Appendix A). Overall satisfaction with prenatal care was defined as "an attitude of a pregnant woman about three major aspects of the prenatal care she has received: provider, staff, and services" (Omar & Schiffman, 1995, p. 140).

Donabedian (2003) describes quality of care as being determined by structure, process and outcome. As described earlier, structure refers to the conditions under which care is delivered. Process is defined as the activities that a provider carries out in care delivery, and outcome refers to changes in individuals that can be attributed to health care, including: changes in health status, knowledge, behaviour, and satisfaction with the care received.

Significance of the Study

The identification of factors related to women's satisfaction with prenatal care provided the much needed information on the structure and process variables that can be used to improve women's satisfaction with existing and future prenatal care delivery models. The understanding of the factors and the relationship of those factors with structure, process, and outcome variables is important for resource allocation, program

planning, and policy development, particularly at a time in which new and innovative prenatal care delivery models are being considered. As new prenatal care delivery models are developed, the predictors of satisfaction need to be considered in program planning, implementation and evaluation. Resources need to be allocated in a manner that facilitates the implementation of the structure and process elements that predict satisfaction.

Chapter II: Literature Review

There is substantial observational evidence that prenatal care provides numerous maternal and infant health benefits (Alexander & Kotelchuck, 2001). This study examines the factors related to pregnant women's satisfaction with prenatal care.

In this chapter the theoretical underpinnings of the concept of satisfaction are discussed. Knowledge on the health care attributes and personal characteristics associated with satisfaction is presented. Quantitative and qualitative studies on satisfaction with prenatal care are reviewed, and the need for future research on the factors related to satisfaction with prenatal care is identified.

Satisfaction has long been recognized as a predictor of adherence to medical recommendations and utilization (Aharony & Strasser, 1993; Thomas & Penchansky, 1984; Zastowny et al., 1989; Ware et al., 1975). Patient satisfaction has emerged as a necessary, legitimate, and desirable outcome of health care in its own right (Williams & Wilkinson, 1995). In 2007, Accreditation Canada (2007) introduced a new standards framework made up of four standard areas, including one entitled "Positive Client Experience." The key elements for this standard area were identified as: client values, needs, and preferences; information, communication and education; quality of life; and coordination and integration. This standard area is tied to the following set of key outcomes: client satisfaction; client perceptions of care received; and improved client well-being. In addition, maternal satisfaction with prenatal care has been included as part of the measures included in a maternity care minimum data set for the evaluation of models for maternity care in the U.S. (Devane et al., 2007).

Prenatal Care

From its origins of just over 100 years ago, prenatal care has become a widely used preventive health service, if not the most used one, in North America (Alexander & Kotelchuck, 2001; Moos, 2006). Prenatal care has been defined as maternal care involving clinical assessment and a series of well-delineated interventions to reduce risk factors associated with poor maternal and infant outcomes, to address behavioural factors, and to treat medical conditions (Bennett et al., 2009; U.S. Department of Health and Human Services, 2000).

The United States (U.S.) Department of Health and Human Services (2000) proposes that timely and good quality prenatal care can help to prevent poor birth outcomes and improve maternal health. Infants born to mothers without prenatal care, and mothers who did not receive prenatal care, were found to have increased rates of mortality (American College of Obstetricians and Gynecologists, 2007). In terms of infant outcomes, a lack of prenatal care increases the relative risk of neonatal death by 2.1 fold (Vintzileos, Ananth, Smulian, Scorza, & Knuppel, 2002b). The absence of prenatal care increases the relative risk for preterm birth by 2.8 fold (Vintzileos et al., 2002a). In terms of maternal health, Cantwell et al. (2011), for example, in *The Confidential Enquiries into Maternal Deaths in the United Kingdom*, identified that 20 of the 22 maternal deaths related to pre-eclampsia involved substandard care (poor diagnosis and failure to act on obvious serious disease), illustrating the importance of good quality prenatal care to maternal health.

Prenatal care is more likely to be effective if women begin receiving care early in pregnancy (in the first trimester), and continue with regular prenatal care throughout pregnancy, according to accepted standards of periodicity (U.S. Department of Health and Human Services, 2000). Although recommendations about the number of visits and when they should occur in a pregnancy vary (National Collaborating Centre for Women's and Children's Health, 2008; Society of Obstetricians and Gynecologists of Canada [SOGC], 2006; World Health Organization, 2013), most guidelines recommend a visit in the first trimester. The SOGC (2006) recommends that women receive the first prenatal visit within the first 12 weeks of gestation, visits every four to six weeks until 30 weeks of gestation, visits every two to three weeks up to 36 weeks of gestation, and then visits every week until delivery. This standard of periodicity is a result of the SOGC consensus statement recommending a schedule of reduced visits. The SOGC recommends that prenatal care providers consider a woman's expectations in terms of the number of visits. This standard of periodicity is consistent with the findings of two Cochrane reviews. Evidence supported small reductions (less than or equal to two visits) in the frequency of prenatal visits in low-risk pregnancies (Villar, Carroli, Khan-Neelofur, Piaggio, & Gülmezoglu, 2001) A more recent Cochrane review (Dowswell et al., 2010) found no statistically significant difference in perinatal mortality between women with low-risk pregnancies who received a reduced visit schedule and those who received standard care in high-income countries. Perinatal mortality was, however, significantly higher in the reduced visit groups in low and middle-income countries.

In a recent population-based study in Manitoba, inadequate prenatal care (calculated using a prenatal care utilization index) was associated with adverse fetal-infant and maternal outcomes including: higher rates of stillbirth, low birth weight, small for gestational age, preterm birth, maternal postpartum depression/anxiety, short inter-pregnancy intervals, and lower rates of breastfeeding initiation and of immunization at 1 year of age (Heaman, Martens, et al., 2012). In an earlier study, Heaman et al. (2005) found that inadequate prenatal care was associated with more than double the likelihood of preterm birth after controlling for other risk factors.

Most women in Winnipeg receive prenatal care, and only 0.4% of women do not receive any prenatal care (Heaman, Green, Newburn-Cook, Elliott, & Helewa, 2007). High rates of inadequate prenatal care, however, have been found in some Winnipeg neighbourhoods, ranging from a low of 0.7% to a high of 21.0% (Heaman et al., 2007). More recently, Heaman et al. (2010) reported findings from a case-control study on factors associated with inadequate prenatal care conducted in Winnipeg among women living in the inner-city. Heaman et al. (2010) reported that barriers to adequate prenatal care included: transportation problems; having to wait too long to get an appointment; having to wait too long in the waiting room; child-care problems; and not being able to get an appointment (Heaman et al., 2010).

The high rates of inadequate care in some Winnipeg neighbourhoods and the barriers to adequate prenatal care point to the need to improve existing prenatal care services, and to potentially develop new and innovative models of prenatal care in Winnipeg. As Alexander and Kotelchuck (2001) identify, little attention has been

directed toward process and system variables that influence the receipt of care, including satisfaction, availability, accessibility, acceptability, affordability, types and mix of providers, continuity, comprehensiveness, and cultural competence. Satisfaction may be associated with the utilization of prenatal care, but little attention has been directed toward structure and process variables that influence satisfaction with prenatal care. This study sought to identify the structure and process factors that affect satisfaction with prenatal care.

Satisfaction: Theoretical Underpinnings and Conceptual Frameworks

Satisfaction has been studied, both as an independent variable predictive of subsequent health behaviours, and as a dependent variable determined by service and user characteristics (Linder-Pelz, 1982b). When considered as a dependent variable, it has been suggested that patient satisfaction may yield useful information to improve care (Bowen, 2006). The remainder of this chapter will focus on satisfaction as a dependent variable.

Ware, Snyder, Wright, and Davies (1983) did most of the early theoretical work related to the concept of satisfaction and developed a taxonomy with eight dimensions: interpersonal manner; technical quality of care; accessibility/convenience factors; finances; efficacy/outcomes; continuity of care; physical environment; and availability. This classification has served as the basis for much of the later work on patient satisfaction. A meta-analysis of the satisfaction literature identified the following additional dimensions: overall quality; amount of information; bureaucracy/organization; and attention to psychosocial problems (Hall & Dornan, 1988). Individuals distinguish

among the dimensions, while also making an overall evaluation of the care as a whole (Linder-Pelz, 1982a; Linder-Pelz & Struening, 1985). Examination of overall satisfaction without the various dimensions of satisfaction was considered to be of limited utility in understanding how one might improve satisfaction with prenatal care. In this study, it was considered important to examine satisfaction as a multidimensional concept in order to yield information related to structure and process aspects of care for each of the dimensions of satisfaction.

Most of the literature on the theoretical foundations of the concept of "satisfaction" is drawn from the fields of marketing, job satisfaction research, and health care, with most works published in the 1980s and largely based on social-psychological theories, particularly discrepancy, fulfillment, and expectancy theories (Crow et al., 2002). Attention is particularly drawn in the present study to the work of Linder-Pelz (1982a, 1982b) since it has been seminal to satisfaction in health care (Crow et al., 2002; Omar et al., 2001).

Linder-Pelz (1982a) based her work on an extensive review of the socio-psychological and job satisfaction literature. Using the research on job satisfaction (Lawler, 1971; Vroom, 1964), and the work of Fishbein and Ajzen (1975) on attitude theory, Linder-Pelz (1982b) described satisfaction as the expression of an attitude. Attitude was conceptualized as evaluative in nature, an affective response, proposed to be related to both the belief that the care has certain attributes (dimensions) and the patient's evaluation of those attributes. Beliefs and associated evaluations are considered to be determinants of attitude (Fishbein & Ajzen, 1975).

Linder-Pelz (1982b) described “beliefs” as “cognitive” and “attitudes” as “affective.” Expectations were referred to as “beliefs” and described as “perceived probable outcomes” (Linder-Pelz, 1982b). Linder-Pelz (1982b) proposed that on the basis of attitude theory and job satisfaction theory, beliefs and associated evaluations are the determinants of an attitude and that satisfaction is a positive attitude. The proposition that satisfaction is based on a combination of belief strength and attribute evaluation was previously supported empirically (Ware, Davies-Avery, & Stewart, 1978). Linder-Pelz (1982b) defined patient satisfaction as the individual’s positive evaluation of distinct dimensions of the health care experienced. Health care is described by Linder-Pelz (1982b) as a single ambulatory care visit, treatment over the course of an illness, a particular health care setting, or the health care system in general.

In a prospective test of associated hypotheses with patients attending the outpatient clinics for the first time, Linder-Pelz (1982a) found that people distinguish among “values,” “entitlement,” and “expectations” in respect to an upcoming event. Linder-Pelz (1982a) measured the effects of these constructs in the following three dimensions of satisfaction: physician conduct, convenience, and general satisfaction. Consistent with previous research, (Korsch, Gozzi, & Francis, 1968; Larsen & Rootman, 1976) Linder Pelz (1982a) found expectations had independent effects on satisfaction. Expectations were the most important social psychological determinant of satisfaction, with significant independent effects on two of three satisfaction scales, particularly the effect of prior expectations of the “physician’s behaviour” on satisfaction and “convenience” on satisfaction (Linder-Pelz, 1982a). Linder-Pelz (1982a) indicated that

support was found for a general discrepancy model, which predicts that the greater the discrepancy between perceived occurrences and prior expectations, the less the satisfaction. Linder-Pelz (1982b) described social psychological determinants as distinct, but not unrelated to socio-demographic variables.

Gottlieb, Grewal, and Brown (1994), in their attempt to build and test a model to explain the relationships among disconfirmation of expectations, perceived quality, satisfaction, situational control, and behavioural intentions, also found support for the disconfirmation of expectations affecting satisfaction. The works of Linder-Pelz's (1982a; 1982b) and Gottlieb et al. (1994) demonstrate the importance of expectations to satisfaction, and the discrepancy between expectations and actual care received, yet few studies have examined expectations in satisfaction with prenatal care (Omar et al., 2001).

Thompson and Sunol (1995) extended the work of Linder-Pelz (1982a, 1982b) and developed the assimilation-contrast model of satisfaction, which included a taxonomy of four types of expectations that patients formulate about the prospective use of services, including: ideal, predicted, normative, and unformed. Thompson and Sunol suggested that perceptions in relation to expectations may not be as linear as proposed by Linder-Pelz (1982a). Using elements of three models, the cognition-affect model of satisfaction (Oliver, 1993), the assimilation-contrast model of perceptions (Anderson, 1973), and the zone of tolerance model (Parasuraman, Berry, & Zeithaml, 1991), Thompson and Sunol developed an assimilation-contrast model of satisfaction. Oliver (1993) used consumer research on post-purchase response and attribute performance of expectancy-disconfirmation theory to propose that prior expectations undergo

modification as the encounter occurs. Expectancy disconfirmation refers to a comparison between prior expectations and perceptions of actual goods or service attributes, with dissatisfaction proposed to arise when experiences disconfirm positive expectations or when experiences confirm negative expectations (Oliver, 1993). Assimilation-contrast theory (Anderson, 1973) suggests that when perceptions of attribute performance are only slightly different from expectations, there is a tendency to interpret perceptions more congruently with expectations (assimilation effect). The zone of tolerance model (Parasuraman et al., 1991) identifies the range between adequate and desired levels of service expectations. Thompson and Sunol's model suggests that between levels of achievable normative expectations and minimum predictable expectations, perceptions of service attributes will be considered satisfactory, similar to the concept of assimilation.

Thompson and Sunol (1995) described initial perceptions as occurring before the process of assimilation, and indicated that perceptions of attribute performance are modified after the assimilation-contrast effect. The assimilation effect is proposed to occur around a band of the predicted expectations (zone of tolerance). The lower boundary of the zone of tolerance is the minimum predictable level and the upper boundary is the achievable normative level, assuming normative expectations will exceed predicted expectations. An exaggerated effect is proposed to occur outside the zone of tolerance towards high dissatisfaction when predicted expectations are well below initial perceptions and towards low dissatisfaction when predicted expectations are well above initial perceptions of service attributes. The work of Linder-Pelz (1982a,

1982b) is extended by considering several types of expectations, including the notion that expectations may be unformed, and by considering how expectations change over time. Thompson and Sunol's model suggests the need for measuring expectations prior to the first visit and over a period of time (longitudinal). Prenatal care involves a course of care over a period of eight to nine months and may be ideally suited to test Thompson and Sunol's model.

Bowling et al. (2012) directed their work on expectations to the formation of expectations. A conceptual model proposed by Bowling et al. considers personal characteristics, previous experiences, role models (including media and society), physiological feedback, as well as psycho-social and social cognitive theory (attitudes, motivation, self-efficacy, mastery, perceptions, optimism/pessimism, beliefs/knowledge and values and norms) as impacting the formulation of dynamic expectations of health care structure, process, and outcomes. Over time, one can observe the evolution of theory from the relationship of expectations to satisfaction towards the recognition that expectations are dynamic in nature, and more recently towards a focus on how expectations are formulated.

Williams, Coyle, and Healy (1998) and Cassady et al. (2000) have found that user satisfaction is more reflective of perceptions of adequacy, which is similar to Thompson and Sunol (1995) in their assimilation-contrast model of satisfaction, as opposed to a description of people's actual experiences in interacting with the health system. It has been suggested that efforts must be directed to designing methods to learn about the users' experiences of the services provided and their evaluation of those

experiences (Pettersen, Veenstra, Guldvog, & Kolstad, 2004; Williams et al., 1998). Experience measures have also been regarded as yielding detailed information for quality improvement (Cleary & Edgman-Levitan, 1997). Sixma, Kerssens, Campen, and Peters (1998) proposed that it is important to consider the basic components of the concept of satisfaction: expectations and experience.

Other conceptual models focus on the evaluation of aspects of health care as affecting satisfaction. Donabedian's (2003) structure, process, and outcome evaluation framework is one such example. Donabedian (2003) provides a framework for assessment that suggests the components of care that are most pertinent at successively more inclusive levels of attention. His framework (Figure 1) includes a set of concentric semi-circles at the core of which is the patient-provider interaction. Beyond this core is the care implemented by the patient and by the family, and then the care received from the community. Donabedian's (2003) framework draws attention not only to the role of the provider, but it is more ecological in that it draws attention to the various other components that contribute to health. This attention to care beyond the provider-patient relationship is particularly relevant to prenatal care. Donabedian (2003) includes "acceptability" as an important aspect of care, and defines it as "conformity to the wishes, desires, and expectations of patients and their families" (Donabedian, 2003, p. 6). Acceptability is considered to be made up of the following components: accessibility; patient-provider relationship; amenities of care; patient preferences in terms of effects, risks and cost of care; and what patients consider as fair and equitable (Donabedian, 2003).

Donabedian (2003) views structure (organization and facilities) and process (technical and interpersonal) as affecting outcome. Donabedian (2003) defines outcome as the changes in individuals that can be attributed to health care, including changes in health status, changes in knowledge, changes in behaviour, and satisfaction with the care received (Figure 2). Donabedian (2003) indicates that in order to make inferences about the three approaches in the framework, there must be a predetermined relationship among the structure, process, and outcome. He further states, however, that its linearity is a simplified depiction of a much more complex reality. The problem of attribution is identified. Donabedian (2003), as did Linder-Pelz (1982b), suggests the relationship between process and outcome is often imperfectly known since patients vary in their medical, social, and psychological characteristics, and these characteristics are proposed to influence outcomes either independently of process or by interacting with process.

Donabedian (2003) proposes that having the needed equipment and qualified personnel as part of the structure is related to process aspects, including expertly executing technical care with an empathetic, participatory, and patient-practitioner interaction, and is associated with patient satisfaction. The proposed relationships with quality (needed equipment, qualified personnel, and expert execution of technical care) are consistent with Gottlieb et al.'s (1994) work, where they examined perceived quality and patient satisfaction to determine if they were complementary or divergent constructs. Two models were compared for their ability to explain the relationship between perceived quality and satisfaction. The results of their study indicate that perceived quality affected satisfaction and behavioural intentions were affected by satisfaction.

Perceived quality affected satisfaction, yet satisfaction did not affect perceived quality. Various authors have considered quality and satisfaction as interchangeable concepts (Williams & Wilkinson, 1995). Based on the findings of Gottlieb et al., however, quality of care should be studied as an independent variable.

The centrality of the interpersonal relationship in Donabedian's (2003) framework is consistent with the work of Linder-Pelz and Stuening (1985). Linder-Pelz and Struening in their test of multidimensionality found physician conduct to be more important than any other factor in determining satisfaction. Donabedian (2003) states the following: "In fact in many cases, the proper management of the patient-practitioner relationship is in itself the most important technique of care" (Donabedian, 2003, p. 20). Kiesler and Auerbach (2003), in a review of the literature, identify that physician communication during medical visits has been shown to consist of interwoven instrumental behaviours (that execute the physician's expertise in diagnosis and treatment) and affective/socio-emotional behaviours (that establish interpersonal relationships). As Donabedian (2003) asserts, it is the interpersonal relationship that is the vehicle by which technical care is implemented. In addition, Donabedian (2003) suggests that the patient-provider relationship is perhaps the most sensitive indicator of the persistence of differences adverse to the underprivileged in the organization and delivery of care. Donabedian's (2003) framework guides researchers to focus on the structural aspects of care and processes related to the quality of care, including the nature of patient-provider interpersonal relationship in assessing satisfaction. The consistency of Donabedian's (2003) propositions with the evidence on patient satisfaction provides a

strong foundation upon which to further develop knowledge on women's satisfaction with prenatal care.

Based on the analysis of the theoretical underpinnings of satisfaction in the literature and the conceptual frameworks reviewed, it is important that satisfaction studies measure satisfaction as a multidimensional concept, that expectations as a determinant of satisfaction be considered, that the influence of socio-demographic factors on expectations and satisfaction be explored, and that the relationship between perceived quality and experience and satisfaction be determined.

Donabedian's (2003) structure, process, and outcome framework was deemed to provide an appropriate framework to examine pregnant women's satisfaction with prenatal care. The framework proposes the relationship of various determinants of satisfaction consistent with previous research on the concept of satisfaction. Examining processes of care facilitates the consideration of experiences in relation to satisfaction, and is suitable for studying prenatal care as identified earlier.

Several measurement issues have been identified related to satisfaction. A major issue is the lack of response variability in satisfaction surveys, with most surveys reporting high satisfaction levels (Williams et al., 1998). Similarly, high satisfaction levels have been reported with surveys of satisfaction with prenatal care (Erci & Ivanov, 2004; Shapiro, 1999). Handler, Rosenberg, Raube, and Kelley (1998) suggest that instruments measuring health care in general may not be appropriate for measuring satisfaction with prenatal care, as prenatal care is provided to essentially healthy women

over a course of care relative to a birth, and it includes both educational and risk assessment components.

Hall and Dornan (1988) in their review of the literature noted that indicators used in the measurement of satisfaction have generally not been related to empirically based models of satisfaction. As a result many of the instruments were not necessarily valid or reliable (Sixma et al., 1998; Avis, Bond, & Arthur, 1995; Sitzia, 1999). It is important that instruments be conceptually relevant in order to yield high-quality data (Polit & Beck, 2012). Items in instruments need to be reliably measuring the critical attributes of satisfaction and need to accurately reflect the construct of satisfaction. Content validity, for example, must be based on a thorough conceptualization of satisfaction based on empirical findings, as suggested by Hall and Dornan (1988).

Another issue affecting the measurement of satisfaction with prenatal care is the effect of the timing of its measurement. Women have consistently reported high satisfaction when it is measured in the immediate postpartum period, even when prenatal care was deficient (Dennis, Flynn, & Martin, 1995; Kojo-Austin, Malin, & Hemminki, 1993). Satisfaction with prenatal care may therefore be confounded by the delivery of a healthy baby (Handler et al., 1998; Green, Renfrew, & Curtis, 2000).

Patient satisfaction instruments have tended to be biased towards issues that are largely of concern to health care providers rather than the concerns of the users (Calnan, 1988; Wensing, Grol, & Smits, 1994). Patients have rarely been involved in the selection of the aspects of satisfaction that were measured (Wensing et al., 1994). For example, Ivanov (2000) developed the Prenatal Care Survey to measure satisfaction based on a

conceptual framework, and it was reviewed by content experts, with no input from pregnant women. The methods in this study propose to improve upon previous studies with the use of valid and reliable measures of satisfaction specifically designed for prenatal care and developed with the input of pregnant women (Omar et al., 2001). Satisfaction was also measured in the late prenatal period to avoid the potential bias of delivery on satisfaction with prenatal care.

Attributes of Satisfaction: Structure and Process

This section identifies the structural and process attributes related to satisfaction identified in the literature. Donabedian (2003) proposes that structural aspects of care, such as a properly functioning appointment system, and pleasant and comfortable surroundings, are associated with satisfaction. Continuity of care and accessibility have also been identified as important to patient satisfaction. Patients who received a high proportion of their care from their primary care physician, particularly those who had long-term relationships with their physicians, were more likely to be satisfied with their care (Donahue, Ashkin, & Pathman, 2005; Grunfeld et al., 1999; Rodriguez, Rogers, Marshall, & Safran, 2007; Saultz & Albedaiwi, 2004). Grunfield et al. (1999) found that women with breast cancer in remission and who were randomized to follow-up care in a hospital-based clinic or with their primary care physicians reported significantly higher satisfaction among women in the primary care physician group. The women identified that they valued the speed and accessibility of such primary care, as well as the fact they were seeing a physician who knew them. Linder-Pelz and Struening (1985) found that

convenience (the ease of getting to the clinic) explained 7% (R^2 = .07) of general satisfaction.

Anderson, Camacho, and Balkrishnan (2007) examined the relationship between wait time and patient satisfaction in primary care, and found that longer wait times were associated with lower patient satisfaction. Patient dissatisfaction associated with longer wait times was, however, substantially reduced by increased time spent with the physician. Likewise Bikker and Thompson (2006) conducted a secondary analysis of data from a national telephone survey with 3,252 participants in Scotland, and also found that time, physical facilities, and access were predictors of satisfaction in general practice. Physical facilities and access were predictors of satisfaction with outpatient services.

Many of the structural characteristics found in the general satisfaction literature were also found in the satisfaction with prenatal care studies. These characteristics included waiting time in the setting (Erci & Ivanov, 2004; Handler, Raube, Kelley, & Giachello, 1996; Handler et al., 1998; Handler, Rosenberg, Raube, & Lyons, 2003); continuity of provider (Handler et al., 1996); time to get an appointment; number of providers seen during a course of care (Handler et al., 2003); number of prenatal visits (Sikorski, Wilson, Clement, Das, & Smeeton, 1996; Villar et al., 2001); time spent with the provider (Handler et al., 1996; Handler et al., 2003); and the physical environment (Handler et al., 1996; Handler et al., 2003). Ivanov (2000) found that convenience of prenatal care services was significantly related to satisfaction (R^2 = 0.21). Sikorski et al. (1996), in a randomized controlled trial comparing the effectiveness of the traditional

British prenatal visit schedule with a reduced schedule of visits with 2,794 low-risk women, found that despite the fact that a reduction in the number of prenatal visits was demonstrated to be safe in low-risk pregnancies, women reported less satisfaction with the reduced number of visits and felt that their expectations of care were not fulfilled (Sikorski et al., 1996). Not only were women less satisfied but they also had increased maternal anxiety (Sikorski et al., 1996). Sikorski et al. indicated that nulliparas (women who have not had a live birth), in particular, chose to decline participation in the reduced visit study.

Process attributes of satisfaction.

As identified by Donabedian (2003), the characteristics of health care processes provide discriminating and valid judgements about the quality of care. Technical care is described as including treatment, prevention, and patient education. Attributes associated with "technical quality" included skillful execution of tasks, knowledgeable explanation of procedures, and maintenance of practice standards (Ware et al., 1978). Sword et al. (2012), in their qualitative study on pregnant women's and providers' perspectives of the quality of prenatal care, found pregnant women identified the value of screening and assessment, particularly tests and measurements, as part of quality prenatal care. Tests and measurements were seen as providing reassurance that the pregnancy and fetal development were progressing as they should. The availability of ancillary services was also associated with satisfaction (Handler et al., 1998; Handler et al., 2003).

Provider attributes included personality traits and ability in what was termed by Ware et al. (1978) as the "art of care." Provider attributes perceived positively and

associated with the "art of care" included: friendliness, patience, and sincerity. Linder-Pelz and Struening (1985) found that satisfaction with the physician's conduct explained 18% of general satisfaction with the encounter ($R^2 = 0.18$).

Little et al. (2001), in a study on the relationship between perceptions of patient centeredness and satisfaction in general practice, found that the main independent predictors of satisfaction were the patient's perception of communication/partnership (a sympathetic provider interested in the patient's concerns and expectations) and a positive provider approach. The model predicted that satisfaction with the consultation explained most of the variance ($R^2 = 0.78$). Communication/partnership was the strongest predictor of satisfaction ($\beta = 0.96$; 95% confidence interval 0.87 to 1.05; $P < 0.001$).

There is also evidence to suggest that empathetic patient-centered interactions with health care providers not only improves patient satisfaction (Haslam, 2007; Kim, Kaplowitz, & Johnston, 2004; Kinnersley, Stott, Peters, & Harvey, 1999; Norfolk, Birdi, & Walsh, 2007; Zachariae et al., 2003), but also enablement (Mercer, Reilly, & Watt, 2002), and it may improve health outcomes (Price, Mercer, & McPherson, 2006; Bikker, Mercer, & Reilly, 2005; Neumann et al., 2007).

Provider attributes have also been associated with satisfaction with prenatal care. Ivanov (2000) reported that the physician's behaviour was significantly related to satisfaction with prenatal care ($R^2 = 0.39$). Handler et al. (1998) found that the two most important variables affecting satisfaction with prenatal care were communication with the provider, and whether the provider explained procedures. Communication had explanatory power even though women were very satisfied (Handler et al., 1998). More

specifically, the most important determinant was whether the provider explained procedures (Handler et al., 1998). Evidence has also been found for negative experiences with health care providers and decreased patient satisfaction with prenatal care (Ivanov, 2000).

Handler et al. (1998) found that pregnant women who received prenatal care from male providers were more satisfied. Female physicians have been found to engage in significantly more patient-centered types of communication (Roter & Hall, 2004). However, Roter and Hall (2004) in their review of the research found that in obstetrics and gynecology, male physicians demonstrated more "emotionally focused talk" than their female counterparts, suggesting a different pattern from that of primary care physicians.

Personal Characteristics and Satisfaction

Patient characteristics are thought to influence the level of satisfaction. Different people assigned different evaluations to various aspects of care (Crow et al., 2002). Health status and socio-demographic factors have been deemed to be important to consider. The relationship between different factors, such as health status, age, gender, race, education, income, marital status and satisfaction, has been investigated. In this section, findings from the general health care literature will be presented, and then followed immediately by the findings in the satisfaction with prenatal care literature for ease of discussion.

One of the most consistent determinant characteristics has been age, with a body of evidence suggesting that increased satisfaction is significantly and positively

associated with increasing age (Crow et al., 2002; Mummalaneni & Gopalakrishna, 1995). Khayat & Salter (1994) found that younger patients were less satisfied with issues surrounding the consultation in primary care settings. Contradictory findings have been found with respect to age and satisfaction with prenatal care. Handler et al. (2003) found that younger women were more satisfied overall with prenatal care, whereas others have found younger women to be less satisfied overall with prenatal care (Handler et al., 1996; Zadoroznyi, 1996).

In the general patient satisfaction literature, educational attainment has been identified as having a significant bearing on satisfaction, with the trend being that greater satisfaction is associated with lower levels of education (Anderson & Zimmerman, 1993; Hall & Dornan, 1990). Research conducted in the United Kingdom, however, has not yielded supportive evidence for education as a determinant (Sitzia & Wood, 1997). Sitzia and Wood (1997) propose that other factors such as income may be confounding the findings. Women's education was significantly associated with satisfaction with the convenience of prenatal care services in particular; women with less education were more satisfied in one study by Ivanov (2000). However, in another study, Erci and Ivanov (2004) found that women with higher education were more satisfied with prenatal care. It is important to note that the research by Ivanov was conducted in Russia whereas the research by Erci and Ivanov was conducted in Turkey. Pregnant women in Russia receive several benefits with pregnancy that may be affecting the level of satisfaction with prenatal care for women with lower levels of education, namely a financial incentive to attend prenatal care early in their pregnancies, decreased workloads with

employment at 18-20 weeks of gestation, and maternity leave at 30 weeks of gestation with full pay.

Hall and Dornan (1990) viewed social status as being "nearly" significantly related to satisfaction, but as greater satisfaction was associated with higher social status in the general satisfaction literature, Hall and Dornan (1990) added that it was "perplexing to say the least" that results for social status and education were observed to go in opposite directions. Hall and Dornan (1990) state that this may be partly explained by evidence from the U.S. that more affluent patients simply receive better treatment from physicians than less privileged patients, even within the same health care facility. Likewise, Handler et al. (2003) found that pregnant women with private insurance were significantly less satisfied with their prenatal care than pregnant women on Medicaid. Erci and Ivanov (2004), however, found that women with greater economic resources reported higher levels of satisfaction. Zadoroznj (1996) also found a positive relationship between income and satisfaction in prenatal care.

In terms of race, whites have reported greater satisfaction with health care in the U.S. (Pascoe, 1983). Handler et al. (1996), however, did not report any differences in satisfaction among women of different races or ethnic groups. Doering (1983) identifies that ethnic origin is perhaps one of the most complex determinants as the interaction between ethnicity and socioeconomic status has been shown to confuse the findings. In terms of marital status, only Laslett, Brown, and Lumley (1997) found that being married was associated with greater satisfaction with prenatal care. None of the other studies demonstrated any relationship between marital status and satisfaction. Handler et al.,

(1998) found that the only personal variable related to satisfaction was whether the woman reported she was glad when she first discovered she was pregnant.

Only one study demonstrated a positive relationship between pregnancy risk status and satisfaction (Laslett et al., 1997.). Laslett et al. (1997) also found a negative relationship between parity and satisfaction with provider care (r = -.137, p = .044). Likewise, Erci and Ivanov (2004) found a negative relationship with parity and overall satisfaction, as well as with the courtesy of personnel. It is likely that women with higher parity have different needs in prenatal care. Sikorski et al. (1996), for example, found that nulliparous women, were less interested in receiving a decreased visit schedule than multiparous women.

Dube, Belanger, and Trudeau (1996) suggested that a positive emotional status is the most consistent predictor of satisfaction. Kaldenberg (2001), on the other hand, in a study with obstetrical patients reported that satisfaction was related to mental or physical health. Hopton, Howie, and Porter (1993) found a positive relationship between perceived distress and the patient's age, waiting time, and length of visit, and concluded that particular dimensions of distress influenced dimensions of satisfaction. Hopton et al. suggested that theories proposing that people with psychological distress are more likely to be generally dissatisfied with health care are too simplistic. Tough et al. (2004) found that women with poor emotional health were more likely to be less satisfied with prenatal care, particularly with regards to communication, decision-making, and emotional support.

Hall and Dornan (1990), in their meta-analysis, concluded that socio-demographic characteristics are at best a weak predictor of satisfaction. Others (Fox & Storms, 1981; Pascoe, 1983) have highlighted the lack of consistency of the effects of these variables in satisfaction research. Mummalaneni and Gopalakrishna (1995) identified that socio-demographic characteristics do not necessarily influence patient satisfaction directly, but may have a moderating influence affecting the relationship between factors, such as the physician's behaviour (interpersonal) and continuity of care. As Hall and Dornan (1990) and Crow et al. (2002) concluded, the association of many of the socio-demographic and personal attributes with satisfaction remains equivocal.

Review of Quantitative Studies

This section reviews the quantitative studies that have been conducted on satisfaction with prenatal care. The studies reviewed are limited to those that examined satisfaction as a dependent variable.

Handler et al. (1998) explored the relationship between personal characteristics, prenatal care characteristics, and satisfaction, with a convenience sample of 101 non-adolescent primiparous pregnant women (75 African-American women and 26 Mexican-American women) receiving Medicaid. The majority of the respondents were less than 25 years of age, unmarried, and of extremely low income. Respondents were younger and later in their pregnancy at the time of data collection than non-respondents.

Responses clustered towards the satisfaction end of the response range (Handler et al., 1998). Prenatal care characteristics (practitioner attributes, service availability, and features of the delivery of care) and personal characteristics (socio-demographics, health

status, behaviours, and pregnancy-related variables) were measured. Satisfaction was measured with the Prenatal Care Satisfaction scale as a multidimensional concept including technical quality, access, physical environment, and efficacy. Reliability and validity for the Prenatal Care Satisfaction scale were supported.

Handler et al. (1998) found the following prenatal care characteristics were associated with increased satisfaction: having procedures explained by the provider, short waiting times at the prenatal care site, the availability of ancillary services, and reporting that the provider was male. Few personal characteristics other than being "glad to find out about being pregnant" by Mexican-American women were related to satisfaction (Handler et al., 1998). The following variables were also associated with satisfaction: practitioner birthplace (U.S.), the explanation of procedures, having questions answered, less than 30-minute wait in the waiting room, the availability of emergency help by telephone, and the number of ancillary services (Handler et al., 1998). Women receiving prenatal care from male providers reported increased satisfaction. Handler et al. (1988) suggest that gender preferences may be related to experiences with providers, the kind of behaviour valued by women, and beliefs about the gender differences of providers. Communication with the provider and whether the provider explained procedures were the most important determinants of satisfaction.

Women who spent more time with their provider did not have significantly higher satisfaction scores than those who did not. Handler et al. (1998) suggest that it may be the quality rather than the quantity of the time spent with the provider that is more important to women's satisfaction. Handler et al. (1988) also note that the high

satisfaction scores observed might be related to modest expectations, although expectations were not measured in this study.

This is one of the few studies on prenatal care that measured satisfaction prior to birth, thereby eliminating the potential bias of the delivery of a baby. The generalizability of the findings is limited due to the focus on two specific populations (African-American and Mexican-American women). It is also the only study reviewed that reported on the differences between respondents and non-respondents. It is uncertain how the differences observed between the respondents and non-respondents (age and gestational age) affected the findings in this study. Contradictory findings with regard to the influence of age on satisfaction have been reported in other studies (Handler, 2003; Zadoroznyi, 1996). The participants in this study received care from a variety of types of providers however, Handler et al. (1998) did not analyze the relationships between type of provider and satisfaction with prenatal care. Expectations, as identified earlier, were also not measured or considered in this study.

Handler et al.'s (1998) study used data from Raube et al.'s (1998) pilot test of the Prenatal Care Satisfaction scale. Raube et al., in their test of the scale, found that the dimensions of prenatal care satisfaction were different from the satisfaction dimensions developed by Ware et al., 1983) for the general population. The results of Raube et al.'s testing of the scale indicate that care provided by the physician is distinguished from the interaction with staff and includes some art of care and quality variables in each dimension. The identification of two dimensions, one related to provider interactions and the other related to staff interactions, suggests that these two dimensions are particularly

important to prenatal care and make a major contribution to knowledge on satisfaction and prenatal care. This observation may be related to the involvement of staff other than the provider, such as nurses, social workers, or dieticians in prenatal care. Other general types of ambulatory care may not involve staff in care as much as occurs in prenatal care.

Handler et al. (2003) in a subsequent study examined satisfaction with prenatal care, with a convenience sample of two groups of pregnant women: African-American women with Medicaid insurance (n= 125) and African-American women (n = 275) with commercial insurance. The participants were receiving care from a large managed care organization in the U.S. Midwest. Participants were over 18 years of age with less than 29 weeks of gestation. Following a prenatal care visit each woman was interviewed. Satisfaction was measured with the instrument tested by Raube et al. (1998) and used by Handler et al. (1998) in their previous study described above. Prenatal care characteristics were measured in this study using four scales created for the study, measuring the following constructs: the provider's communication, ambience of the waiting room, ambience of the exam room, and the women's perception of the availability of ancillary services. The personal and pregnancy characteristics of the participants and the characteristics of the site were considered as covariates in the study (Handler et al., 2003).

Handler et al. (2003) analyzed data for the overall sample, as well as for each of the two groups (Medicaid and commercially insured). Participants in the total sample reported a high degree of satisfaction; commercially insured women reported

significantly less satisfaction than the Medicaid insured women. Younger women, women with higher life satisfaction, and women with no barriers in accessing prenatal care were more satisfied. The prenatal care characteristics that predicted satisfaction for the total sample included: time spent with the patient, clean and comfortable waiting and exam areas, less time spent in the waiting room, and the availability of ancillary services (Handler et al., 2003). The predictors of satisfaction for the Medicaid insured group and commercially insured groups were similar to those for the overall sample. Satisfaction was not, however, predicted by the availability of ancillary services or the ambience of the waiting room in the Medicaid insured group. Participants in the Medicaid group were more satisfied with a physician as a prenatal care provider. In the commercially insured group, participants' satisfaction was predicted by most of the same variables as in the overall sample (Handler et al., 2003).

Consistent with the literature on satisfaction, Donabedian's (2003) framework, and previous research by Handler (1998), structural aspects such as time in the waiting areas, the physical facilities of the waiting and examination areas, and the interpersonal processes of care were demonstrated to be important to satisfaction with prenatal care. This study also broadened the sample used by Handler et al. (1998) to include participants of higher socio-economic status and compared the relationship between prenatal care characteristics and satisfaction with two groups (Medicaid insured and commercially insured). The study was also limited, as was the previous study (Handler et al., 1998), by the inability to generalize the results beyond one race/ethnic group. Handler et al. (2003) hypothesize that the differences observed between the Medicaid

insured and the commercially insured groups may be due to different expectations or increased access to care in managed care organizations. Expectations were not measured. Although the testing of the instrument used in this study was found by Raube et al. (1998) to indicate that different dimensions of care may be more relevant to prenatal care, the scale was not modified to include those dimensions for this study.

Ivanov (2000) conducted a descriptive retrospective study with a convenience sample of 397 women with low-risk, term pregnancies to examine the relationships between the characteristics of women and their utilization and satisfaction with prenatal care services in Russia. Data were collected in the immediate postpartum period (Ivanov, 2000). Ivanov developed a multidimensional satisfaction questionnaire (Prenatal Care Survey) with a four-point Likert scale ranging from very satisfied to very dissatisfied specifically for this study, and based on Aday and Anderson's (1974) framework for the study of access to medical care to measure satisfaction. The questionnaire was reviewed by content experts (Ivanov, 2000). Two dimensions emerged as a result of factor analysis: satisfaction with convenience and satisfaction with the doctor's behaviour. Reliability was adequate for both dimensions. The independent variables in this study were the personal, pregnancy, and health characteristics of participants.

Women with less education were significantly more satisfied with the convenience of prenatal care services, and the fewer negative experiences participants had with their health care provider, the more satisfied they were with their doctor's behaviour and the convenience of prenatal care services. A regular source of care was also significantly related to satisfaction with convenience. No relationship between

utilization and satisfaction was observed in this study (Ivanov, 2000). Ivanov (2000) hypothesized that socialized health care in Russia may account for the lack of relationship between utilization and satisfaction. Ivanov also identified that the conceptual model used in this study and for the development of the instrument used in the study may not have been culturally relevant in a Russian context.

The main concern with this study is the inability to generalize the results beyond the population as there are significant differences in the way health care is delivered in Russia compared to Canada. Although Canada also has a publically funded health care system, pregnant women in Canada generally have a choice in providers and facilities, unlike pregnant women in Russia (Ivanov, 2000). The adaptation of the Aday and Anderson (1974) conceptual model in this study was limiting. In its adaptation, the conceptual model was oversimplified and omitted the proposed relationships between the characteristics of the health care delivery system, personal characteristics, and satisfaction. Using the full conceptual model may have broadened the study to be more comprehensive in its examination of satisfaction with prenatal care. In addition, data were collected in the immediate postpartum period, potentially confounding satisfaction.

Erci and Ivanov (2004) conducted a descriptive correlational study to examine the relationship between women's demographic characteristics and prenatal care characteristics with satisfaction in Turkey. The Prenatal Care Survey was used to measure satisfaction; this was the same instrument used in Ivanov's (2000) previous study described above. Interviews with a convenience sample of 350 postpartum women at low risk for pregnancy complications and with no delivery complications were

conducted in hospital. Factor analysis with the Prenatal Care Survey in this study showed that the items constituted the following six dimensions: convenience, cost of services, coordination of services, courtesy of personnel, information on health care, and the overall satisfaction scale. Reliability was adequate.

Consistent with the results of other studies reviewed above, the participants in this study (Erci & Ivanov, 2004) were also somewhat or very satisfied with prenatal care services. The later in pregnancy prenatal care began, the less satisfied women were with the service. The frequency of prenatal visits and health status was related to satisfaction with the services. The time to travel for services and the wait time were negatively correlated with satisfaction with the services. Women who received care in a primary health centre and from a physician were more satisfied.

The inclusion of prenatal care characteristics in this study (Erci & Ivanov, 2004) demonstrated that both prenatal care characteristics and personal characteristics were important to satisfaction with prenatal care. The findings of this study, as with the previous studies discussed, cannot be generalized to a Canadian population. It is also likely that satisfaction was confounded by birth in this study. This study is limited by the lack of attention to interpersonal processes of care, similar to the previous study (Ivanov, 2000). The Aday and Anderson (1974) conceptual framework may have been limiting as it describes health care characteristics that are more structural in nature and does not make reference to process aspects of care such as interpersonal relationships.

Tough et al. (2004) conducted a study examining the demographic characteristics and lifestyle characteristics of women who reported poor or fair emotional health to

determine if self-reported emotional health prior to pregnancy was related to satisfaction with prenatal care. Tough et al. used data from a population-based, case-control study with 1,265 postpartum women (six weeks postpartum) who had delivered in urban hospitals in two Canadian cities. Cases in the primary study included women who delivered a low birth weight infant (<2500 g); and controls included mothers of infants born at the same hospital, on the same day, of the same gender, and of normal birth weight. Participants were invited to participate in a structured computer-assisted telephone survey within three months of discharge from hospital. The questionnaire was developed for this study by content experts and pilot-tested by the interviewers (Tough et al., 2004). Women were asked to rate their emotional health in the six months prior to pregnancy on a five-point Likert scale from poor to excellent. Satisfaction with prenatal care was assessed through questions about adequate preparation for labour, ability to recognize problems during pregnancy, encouragement to ask questions, joint decision-making, adequacy of addressing questions, time spent at visits, caring and trusted care provision, and emotional support provided (Tough et al., 2004, p. 28). Women with poor emotional health were more likely to report less satisfaction with prenatal care, particularly with regards to communication, decision-making, and emotional support. These women reported feeling uncomfortable asking questions and excluded from decision-making, and they indicated that the environment was threatening. Women with poor emotional health were also more likely to report that the quality of prenatal care received was poor (Tough, et al., 2004). Tough et al. identified that parents of preterm and low birth weight infants reported less overall satisfaction with prenatal care;

however, controlling for that in the analysis did not impact the effect of emotional health on satisfaction.

This study was limited to the focus on emotional health and satisfaction, and as a result only contributed to knowledge with regard to emotional health and satisfaction with prenatal care. Although the contribution is an important one, further study is required to more fully understand the factors related to satisfaction with prenatal care. Several questions on satisfaction were included within a broader instrument capturing information on a broad range of topics. Insufficient information is presented to determine the quality of the instrument used to measure satisfaction.

Hildingsson and Radestad (2005) investigated Swedish women's satisfaction with the medical and emotional aspects of prenatal care, and identified factors associated with dissatisfaction, using a national cohort of 2,746 Swedish-speaking women. Women were surveyed using a mail questionnaire in early pregnancy and at two months postpartum. The questionnaire included items related to women's experiences of physical and emotional well-being, expectations, and experiences of care during pregnancy and childbirth (Hildingsson & Radestad, 2005). Women were asked to assess satisfaction with the medical and emotional aspects of prenatal care using a five-point Likert scale ranging from very satisfied to very dissatisfied. Hildingsson and Radestad identified that questions from previous studies were used together with new questions developed for this study. Insufficient information is provided to assess the quality of the measurement tools used in this study.

As with the other studies, the majority of participants were satisfied with their antenatal care; however, 23% were dissatisfied with the emotional aspects of care and 18% were dissatisfied with the medical aspects of care, particularly women with low levels of education. Women with a high level of education were dissatisfied only with the emotional aspects of care. Social support during pregnancy by the midwife positively affected satisfaction. In a country where most of the prenatal care is provided by midwives, the most significant predictors of dissatisfaction were women's opinions that midwives had not been supportive and had not paid attention to their partner's needs. Women who felt they had not received enough prenatal visits or had three or more midwives providing care over a course of care were more likely to be dissatisfied. Inappropriate time allocated to providing information was also associated with dissatisfaction (Hildingsson & Radestad, 2005).

As with the other studies reviewed, the generalizability of the results was limited. This study was conducted in Sweden, where the majority of prenatal care is provided by midwives. The data related to satisfaction were collected in the postpartum period, potentially biasing the results. The lack of attention to developing a reliable and valid instrument to measure satisfaction in this study brings into question the accuracy of the results. Hildingsson and Rasdestad (2005) referred to the measurement of expectations, but did not identify how they were measured, did not report on them, and did not assess their association with satisfaction.

A wide variety of types of instruments was used in the studies described above. As Hall and Dornan (1988) identified, many of the instruments were developed

specifically for the studies (Hildingsson & Radestad, 2005; Ivanov, 2000; Tough et al., 2004) with little attention to the empirically based models of user conceptions of satisfaction. As Sixma et al. (1998) identified, this lack of attention to the empirically based theoretical constructs calls the validity and reliability of the instruments into question. Handler et al. (1998, 2003) on the other hand, used the Prenatal Care Satisfaction scale, an instrument that was developed using empirically based dimensions of satisfaction by Ware et al. (1983). Satisfactory psychometric properties have also been reported with this instrument. As identified earlier, Raube et al. (1998) in the pilot test of the Prenatal Care Satisfaction scale found that the care provided by the physician is distinguished from the interaction with staff, indicating that dimensions of satisfaction may be different for prenatal care.

Omar et al. (2001) later developed the PESPC instrument and specifically designed it for prenatal care while considering two factors, expectations and satisfaction. The development of this instrument was guided by the work of Linder-Pelz (1982a, 1982b). Factor analysis confirmed four subscales of satisfaction, including the following: satisfaction with information, satisfaction with provider care, satisfaction with staff interest, and satisfaction with system characteristics consistent with the work of Raube et al. (1998). These findings illustrate the importance of using prenatal care-specific satisfaction instruments.

Expectations were not measured in any of the studies reviewed, likely because there was no instrument to measure expectations at the time. Given the theoretical underpinnings of satisfaction, this is a major gap in the literature. The PESPC provides

an opportunity to measure expectations in future studies. The lack of generalizability of the studies to a Canadian context and the lack of satisfaction studies conducted in Canada highlight the importance of conducting a Canadian study. It is also apparent from the reviews above that few studies measure satisfaction before birth, with the exception of Handler et al. (1998, 2003). Future research in satisfaction with prenatal care should be conducted in the prenatal period to avoid confounding satisfaction with the delivery of a baby.

Consistent with the satisfaction literature (Williams et al., 1998), women were generally satisfied in the studies reviewed. All of the studies, with the exception of Hildingsson and Radestad's (2005) study, interviewed women using the structured questionnaires regarding satisfaction, potentially introducing interviewer bias and the tendency for subjects to provide answers that are more socially acceptable (Fitzpatrick, 1991). Self-administered questionnaires may decrease the possibility for response acquiescence. Finally, because these studies were done on women receiving prenatal care, there is a potential selection bias in all of them; it is possible that women who were dissatisfied with prenatal care were not available for selection into the studies.

Review of Qualitative Studies

Qualitative studies related to women's experiences with satisfaction will be reviewed. There were very few qualitative studies that specifically examined satisfaction with prenatal care. Most of the qualitative studies considered the whole of the maternity experience rather that satisfaction with prenatal care itself (Huber & Sandall, 2009; Kennedy, 1995).

Omar and Schiffman (1995) conducted a study to describe pregnant women's expectations and satisfaction with prenatal care. Three focus groups were conducted with a total of 22 women in their third trimester of pregnancy. A diverse sample of women was recruited, including 16 Caucasian women, six African-American women, and seven women who were expecting a first baby; most (17) were on Medicaid.

Omar and Schiffman (1995) identified that three dimensions of expectations emerged including: having one provider; receiving explanations about prenatal care, pregnancy, childbirth and infant care; and getting accessible quality care. Omar and Schiffman reported that prior experiences determined current expectations about prenatal care; women who had received prenatal care before expected to be treated the same as before and to be remembered by the provider and staff. A link between expectations and satisfaction was also reported: when anticipated negative experiences were not met, satisfaction was reported; some women reported dissatisfaction when their expectations were not met (Omar & Schiffman, 1995).

Omar and Schiffman (1995) found that three major dimensions of satisfaction emerged: satisfaction with health care providers, satisfaction with support staff, and satisfaction with prenatal care (continuity of provider; clear explanations, and accessible quality care). Women clearly distinguished their prenatal care provider (nurse-midwife, nurse practitioner, and the physician) from other staff (nurses, social workers, and nutritionist). How the provider treated the women was paramount to their overall satisfaction. Two main elements were important to satisfaction/dissatisfaction with the provider and the support staff, namely, a caring relationship and information. The caring

relationship element included the provider's willingness to answer questions, knowing who the women were, calling women by their first name, attitudes towards children accompanying the woman, how friendly the provider/staff were perceived to be, inclusion of significant others in discussions, and concern for the woman. All women wanted information on their pregnancy, what to expect from prenatal visits, labour and delivery, and parenting. The following elements were identified as important to satisfaction with prenatal care: consistency of health care provider, accessibility and scheduling, waiting time, and other services provided. The lower socio-economic participants reported satisfaction with other services such as a nutritionist, social worker, or public health nurse. Not every woman perceived the need to utilize non-medical support services (Omar & Schiffman, 1995).

This was one of the first studies to consider expectations and satisfaction in pregnant women. Satisfaction with prenatal care encompassed structural or system components and the interpersonal aspects of care. The relationship with the provider had the greatest influence on satisfaction with prenatal care (Omar & Schiffman, 1995). Consistent with the work of Raube et al. (1998), the importance of the woman's relationship with staff was uncovered as an important dimension of satisfaction. Omar and Schiffman (1995) used the information gained in this study to develop the PESPC instrument (Omar et al., 2001).

Handler et al. (1996) conducted a similar study to Omar and Schiffman (1995) with eight focus groups comprised of a total of 50 women to study the prenatal care characteristics that affect women's satisfaction with prenatal care. The focus groups were

conducted with a diverse sample of low-income women (second-generation Mexican and Puerto Rican women, African-American women, and white women). Women were recruited from Women, Infants, and Children nutrition program sites in Chicago. Women were either pregnant or within two months of having given birth. Expectations were measured using a self-administered questionnaire that asked women to rank the importance of various characteristics of prenatal care. The data from the questionnaires were analyzed descriptively (Handler et al., 1996).

Handler et al. (1996) reported that the majority of the participants (94%) identified that it was very important that the provider explained procedures and answer their questions. Only 16% identified that it was important to have a provider of a similar ethnic background to theirs. Five broad themes emerged from the focus groups, including: why women sought prenatal care, the features of care that affected satisfaction, the features of care that did not affect satisfaction, the features of care for which women provided a mixed response about their effect on satisfaction, and how women would design the ideal prenatal care setting (Handler et al., 1998).

Satisfaction with care was not a motivator to seeking prenatal care; rather, motivation was related to a belief that prenatal care made a difference. Hearing the fetal heartbeat provided assurance that all was well. Handler et al. (1996) identified that ultrasound was clearly valued and expected as part of prenatal care. Women expected respect, treatment as individuals, understanding of their personal experiences, and having their questions answered. Technically competent caregivers were considered highly important. It was also important that women's time be respected; they resented long

waits and block appointment scheduling systems. The amount of time waiting was often contrasted to the amount of time spent with the provider. Women wanted the same caregiver throughout the pregnancy but did not mind if they had to see another provider as long as they knew ahead of time and if information was shared. Women reported that the quality of the interaction with the staff and receptionist appeared to make a difference in women's satisfaction; they wanted the staff to show them consideration. Women also wanted a warm and friendly physical office and waiting room. Mixed responses were expressed about the gender of the provider. The most important elements of an ideal prenatal care experience included: high-quality interpersonal communication, clean facilities, a child-friendly waiting room, opportunities for social support, education on what to expect in terms of bodily changes during pregnancy, and explanations of tests, procedures, and what to expect from labour and birth (Handler et al., 1996).

Both this study (Handler et al., 1996) and the study conducted by Omar and Schiffman (1995) have been seminal to our understanding of expectations and satisfaction with prenatal care. Although Handler et al. (1996) did not examine the linkages between expectations and satisfaction, they did provide further evidence for at least one of the dimensions of expectations for prenatal care, namely, explanations of care. It is important to keep in mind that in both the Omar and Schiffman and the Handler et al. (1996) studies data on expectations were collected retrospectively and not prior to the beginning of a course of prenatal care. Both Handler et al. (1996) and Omar and Schiffman (1995) found that the interpersonal processes of care were the most important aspects of satisfaction with prenatal care. Handler et al. (1996) identified the

importance of the quality of care to satisfaction with prenatal care in regards to the form of technically competent care in addition to the structural and interpersonal processes of care. Both Handler et al. (1996) and Omar and Schiffman made significant contributions to the understanding of satisfaction with prenatal care. Both of these author groups subsequently developed instruments to measure satisfaction quantitatively (Raube et al, 1998; Omar et al., 2001).

Bondas (2002) conducted semi-structured interviews and used non-participant observation techniques with nine women at four points in time – 36 weeks of gestation, three weeks postpartum, three months postpartum, and two and a half years after birth – to explore and describe women's experiences with prenatal care. Women were recruited from a rural and an urban primary health care centre, as well as an outpatient maternity clinic at a central hospital in Finland. Most maternity care is provided by midwives in Finland.

Bondas (2002) reported that women identified the importance of consideration of their uniqueness, vulnerability, and worries by the prenatal care provider. The importance of being able to talk to the midwife about problems of life, fears of giving birth, topics they discussed with others, and the need for the midwife to listen to the women were recurring themes in the study. Women identified that when care was reduced to examinations, they felt as though they were treated as a pregnant body, a womb, or like a robot (Bondas, 2002). Women described that when the midwife acted inhumanely, mechanically, stereotypically and generalized, they felt hurt. Not looking the women in the eyes, showing an attitude of distance, being the one who always knew

best, not taking notice of the women's worries, or comparing their worries with those of other women were not seen as helpful by the participants. When women felt that the midwife did not take notice of them, they worried that something wrong with their pregnancy and their baby might go unnoticed (Bondas, 2002). Women in Bondas's study on prenatal experiences also identified the importance of involving family, particularly with regards to ultrasound examinations. The need for social support was identified by women as an important component of prenatal care. Bondas found that both the first-time and multiparous mothers expressed a need for discussion with other women. Women, particularly first-time mothers, wanted to initiate new contacts and expressed a need for friends who were in the same situation; multiparous women wanted to share their experiences with others. Family involvement and opportunities for social support seemed to be important to women's experiences with prenatal care.

Women identified that they wanted to be informed about the content and findings of examinations as it gave them hope that the baby was well and the pregnancy was progressing as it should (Bondas, 2002). Bondas (2002) found that women identified they got anxious if they felt information was being held back. Knowledge about the pregnancy and care was identified as important by women so that they could understand what was going on, know what to anticipate, and know how to participate in care. Bondas found that both pregnant women and women two and a half years after birth identified the importance of trusting the professional competence of the midwife. Women wanted more information about hospital practices and information about what to expect after birth. Women identified that they did not have enough information about

becoming a parent, infant care, breastfeeding and parenting. Bondas found that women without any previous experience of pregnancy found it harder to ask for information and had doubts about asking when they thought their questions were not part of the midwife's practice. Multiparous women identified that they were seldom offered information. Bondas found that women wanted information individually, in groups, written, and early in their pregnancy so that they could change health behaviours if necessary and engage in self-care.

For the most part, it was not possible to discern whether findings were related to data collected before or after birth. As with the quantitative studies, it was found that the birth of a baby may affect women's perceptions of their prenatal care. The generalizability of the results is limited to midwifery care in Finland. This study nonetheless adds to the body of knowledge by providing more descriptive data, particularly in relation to women's experiences with the interpersonal processes of care and particularly to midwifery care.

Douglas, Cervin, and Bower (2007) conducted a study in Halifax, Nova Scotia, using in-depth, semi-structured interviews to explore women's expectations and experiences of family physicians as maternity care providers. Six low-risk women with their first pregnancies completed interviews at 36 weeks of gestation and again at six weeks postpartum. Data were analyzed using a grounded theory approach. Women's expectations fell into four categories: informational support; emotional support; advocacy; and competent professional care. Douglas et al. reported that all the women expected their physicians to communicate information about their medical care, listen to

and respect their wishes, and provide them with competent care. Women described relationships with their family physician as being characterized by mutual trust, and they expected their physicians to have the requisite knowledge and skills to ensure a safe pregnancy and delivery. Douglas et al. found that women valued various types of continuity of care. For example, women identified the need for a birth plan and expressed appreciation when the physician shared the plan with hospital providers and staff. Women also valued continuity of care from their family physicians throughout the prenatal period and the importance of that provider being present for delivery.

Women described a wide range of roles of family physicians that reflected a holistic style of care, as described by Douglas et al. (2007), and that addressed the psychosocial as well as the biomedical needs of the women. Douglas et al. found variability in the extent to which childbearing women wanted to participate in decision-making with their family physicians. Some women expected the physician to assume the decision-making role; other women did not want others "mandating" the way it was going to be. Most women, however, described wanting a shared decision-making process, with physicians acting as coaches and guides.

Similar to Bondas's (2002) findings, Douglas et al. (2007) illustrated the importance of trust, listening, and preparation for birth. This study is particularly relevant to prenatal care as it identifies the importance of shared decision-making in prenatal care. The study is particularly relevant to family physicians providing prenatal care.

The qualitative studies reviewed have provided the information to further understand the observations made in the quantitative studies. The early qualitative study by Omar and Schiffman (1995) provided the foundation for the development of the PIPC by including pregnant women's perspectives on expectations and satisfaction with prenatal care. The qualitative studies have highlighted the importance of perceived quality of care to satisfaction with prenatal care.

The Need for Further Study

Several gaps have been identified in the literature with regard to factors related to satisfaction with prenatal care. Few studies have examined satisfaction prior to birth in the prenatal period (Handler et al., 1998; Omar & Schiffman, 1995), resulting in potentially biased results from the experience of birth.

Many of the studies conducted on satisfaction with prenatal care have been conducted in countries with different health care systems and populations than Canada (Erci & Ivanov, 2004; Handler et al., 1996; Handler et al., 1998; Handler et al., 2003; Hildingsson & Radestad, 2005; Ivanov, 2000). Most of the recent studies on satisfaction with prenatal care have been conducted in developing countries in an effort to improve prenatal care where few women have access to care and where maternal mortality rates are high (Montasser et al., 2012; Oladapo, Iyaniwura, & Sule-Odu, 2008; Zeidan, Idris, & Bhairy, 2011). Few satisfaction studies have been conducted in Canada and those that have, focused on specific variables such as emotional health (Tough et al., 2004) or made comparisons of satisfaction with midwives and physicians as providers of prenatal care (De Koninck, Blais, Joubert, & Gagnon, 2001; Harvey, Rach, Stainton, Jarrell, &

Brant, 2002). Other Canadian studies have focused on specific aspects of prenatal care, such as prenatal sonography (Alkazaleh et al., 2004), and specific situations such as pregnancies complicated by fetal anomalies (Yang, Wen, Walker, Bedux, & Kim, 2007). Therefore, little is known about women's satisfaction with prenatal care in a Canadian context.

Few studies have considered the theoretical underpinnings of satisfaction or used an appropriate conceptual framework to guide the study (Ivanov, 2000; Erci & Ivanov 2004). Based on the analysis of the theoretical underpinnings of satisfaction in the literature and the conceptual frameworks reviewed, essential elements were identified as important to include in a study of pregnant women's satisfaction with prenatal care. It was deemed important to consider satisfaction as a multidimensional concept in order to obtain structure and process information on the various dimensions. As noted earlier, Raube et al. (1998) identified the need to consider the satisfaction with provider and satisfaction with staff as separate dimensions in satisfaction with prenatal care.

The examination of expectations was identified as being important given the support found in the literature on expectations and satisfaction (Gottlieb et al., 1994; Linder-Pelz, 1982a, 1982b), and particularly in light of the lack of consideration of expectations and satisfaction in studies on prenatal care.

Structural and process attributes have been shown to affect satisfaction both theoretically (Gottlieb et al., 1994; Linder-Pelz, 1982a, 1982b) and in studies on prenatal care (Erci & Ivanov, 2004; Handler et al., 1998; Handler, 1996; Hildingsson & Radestad, 2005; Omar & Schiffman, 1995). Given the importance of perceived quality of care in

the qualitative studies reviewed and the support for quality as an independent variable in the literature (Gottlieb et al., 1994), it was considered important to determine the relationship between perceived quality of care and satisfaction. Due to the lack of availability of an instrument to measure the quality of prenatal care, quality has not been measured comprehensively, nor has its relationship to satisfaction with prenatal care been studied quantitatively. The recent development of the QPCQ (Heaman, Sword, et al., 2012) permitted perceived quality of prenatal care to be measured.

The possible influence of socio-demographic factors on expectations (Bowling et al., 2012) and satisfaction (Donabedian, 2003; Linder-Pelz, 1982a) suggested that examining their relationship with expectations and satisfaction might be important, particularly if evidence can be built to determine the socio-demographic variables that affect satisfaction non-equivocally. Once that information is determined then interventions can be tailored to address any particular needs related to those variables.

Donabedian's (2003) structure, process, and outcome framework was deemed to provide an appropriate framework to examine pregnant women's satisfaction with prenatal care. The centrality of interpersonal processes of care in the framework is consistent with the literature on satisfaction with prenatal care. This study sought to examine the relationship between personal and pregnancy characteristics, expectations, quality of care, interpersonal processes of care and overall satisfaction, as well as satisfaction with information, satisfaction with provider care, satisfaction with staff interest, and satisfaction with system characteristics.

Knowledge of the factors related to women's satisfaction with prenatal care may help to improve prenatal care services. As Bowen (2006) identified, it is this consideration of satisfaction as a dependent variable that may yield the most useful information on structure, processes, and outcomes of care and that can be used to improve prenatal care for women.

Chapter III: Design and Methods

Study Design

A cross-sectional, descriptive, correlational study was conducted. A correlation design was appropriate for this study as the intent was to examine the interrelationship or association between the variables rather than infer cause-and-effect relationships. As Polit and Beck (2012) describe, an association is the "tendency for variation in one variable to be related to variation in another" (p. 224). The correlation design was particularly relevant for this study because, as Polit and Beck identify, this type of design is "strong in realism" (p. 229), and therefore useful for solving practical problems such as improving the delivery of prenatal care. Another major benefit of this cross-sectional, correlational design was the ability to collect a large amount of data and to examine a number of interrelationships within a limited time frame (Polit & Beck, 2012).

Setting

Subjects recruited for this study were receiving prenatal care from different types of providers in various settings in the Winnipeg Health Region. The Winnipeg Health Region includes the residents of the City of Winnipeg and the Rural Municipalities of East and West St. Paul, a total population of just over 700,000 people (Winnipeg Regional Health Authority [WRHA], 2011a). As a large referral centre, the WRHA also provides health care support to approximately 500,000 Manitobans who live beyond the boundaries of the Winnipeg Health Region, as well as to the residents of northwestern Ontario and Nunavut, who may require the types of services available in Winnipeg. In 2011-2012, there were 10,879 deliveries in Winnipeg (WRHA, 2012). Approximately

30% of those deliveries were by women who resided outside of the Winnipeg Health Region, (S. Hopkins, personal communication, January 25, 2013). Recruitment in this study was limited to pregnant women living within the boundaries of the Winnipeg Health Region.

In-hospital births occur at two tertiary, University of Manitoba-affiliated sites in Winnipeg. The two hospital birthing sites provide both low and high-risk obstetrical outpatient and inpatient care. With the proclamation of the Midwifery Act in 2000, home birth became an option for women in Manitoba. In 2011 a community-based Birth Centre was opened as an additional option for birth in Winnipeg. Women who deliver at the Birth Centre must be under the care of a midwife and meet the standards for out-of-hospital birth as per the College of Midwives of Manitoba (Women's Health Clinic, 2013). In Winnipeg, the vast majority of women give birth in one of the two hospital birthing sites, with 1% of the total deliveries (2011/2012) in Winnipeg occurring at home or at the Birth Centre (S. Hopkins, personal communication, January 15, 2013).

Prenatal care in Winnipeg is offered by a variety of types of providers in various settings. As a result of the proclamation of both the Midwifery Act, in 2000, and the Registered Nurses Act, in 2001, two new prenatal care providers have been introduced, midwives and nurse practitioners (College of Midwives of Manitoba, 2005-2006; College of Registered Nurses of Manitoba, 2009). In Winnipeg, from 2007-2008 to 2009-2010, 65.3% of women received their prenatal care from an obstetrician, followed by 13.1% from a family physician, 4.5% from a midwife, and 17.0% from a mix of providers (Heaman, Kingston, et al., 2012). Although some family physicians provide all

of the components of maternity care, including delivery, postpartum, and newborn follow-up, many family physicians provide "shared care," whereby the family physician provides prenatal care and then transfers care to another provider for delivery (CIHI, 2004). In Winnipeg, the few nurse practitioners that provide prenatal care do so within a shared care model (H. Pavicic, personal communication, May 5, 2010).

There are now several models of prenatal care in Winnipeg: obstetrician care, midwifery care, family practice maternity care, family practice shared care, and nurse practitioner shared care. Occasionally midwives transfer care, particularly when conditions arise during the pregnancy that may increase the risk of adverse outcomes for either the mother or the fetus.

Prenatal care is delivered in the ambulatory care facilities of the two birthing hospitals, as well as in private physician offices, in community-based clinics, in community health agencies (including the Birth Centre), and at times in women's homes or other locations with a midwife. Permission for access to participants from community-based clinics, midwifery practices, and prenatal classes was obtained from the WRHA (Appendix F). Permission was also obtained from St. Boniface Hospital and the Health Sciences Centre for access to participants in the ambulatory care areas (Appendix G and Appendix H, respectively). Private physicians were approached to assist with recruitment individually.

Subject Selection

A non-probability convenience sample of 216 pregnant women from the ambulatory care facilities of the two birthing hospitals, private physician offices,

community-based clinics, and community health agencies (midwifery practices) were recruited for this study. Inclusion criteria were: pregnant women 18 years of age or older; living within the boundaries of the Winnipeg Health Region; able to speak, understand, and read English; being equal to or greater than 36 weeks of gestation; and having had a minimum of three prenatal visits. Due to financial restrictions, it was not possible to interview women living outside of the boundaries of the Winnipeg Health Region or women who did not speak, understand, and read English. Exclusion criteria were: pregnant women who were employees of the WRHA (the researcher is an employee); women who were incarcerated or being held in a remand centre; women with a fetal anomaly or fetal death; and women with a known psychiatric disorder, women who were receiving psychotropic medication, and/or women who were mentally challenged (not able to make decisions for self).

By including pregnant women at 36 weeks of gestation or greater, it was anticipated that the women would have experienced a prenatal "course of care" and be able to provide information based on that experience. The literature indicated that people tend not to describe their experiences in terms of an encounter, but rather in terms of episodes of care, including care received in different settings. For example, patients with a heart attack have described the care received in the emergency department, the hospital inpatient unit, and the cardiologist's office all in a single account (Cleary & Edgman-Levitan, 1997). Women were required to have had at least three prenatal visits in order to have a basis for rating their satisfaction with prenatal care. Women's experiences and satisfaction with prenatal care were measured during pregnancy since satisfaction with

prenatal care may be confounded by the delivery of a healthy baby (Handler et al., 1998; Green et al., 2000).

In a systematic review of the literature on satisfaction in health care, Crow et al. (2002) recommended the inclusion of disadvantaged groups in satisfaction studies. Recruitment from the hospital ambulatory care clinics and clinics serving the inner-city of Winnipeg facilitated the inclusion of socioeconomically disadvantaged women.

Sample Size

An adequate sample size was required to achieve sufficient statistical power to detect true relationships among the variables. Both the number of independent variables and a power analysis were considered in planning for an adequate sample size. Nunnally and Bernstein (1994) estimate that there should be at least 10 subjects per predictor to achieve a stable prediction equation. In this study 17 predictor variables were used in the regression analysis; using this method, a minimum sample size of 180 was estimated to be required.

Using a power analysis, the sample size was estimated as a function of effect size, the number of predictors (17), and the desired power of 0.80 at a 0.05 level of significance. Polit and Beck (2008) identify that for multiple regression, the estimated population effect size (R^2) is divided by 1- R^2. The power analysis was based on a predicted moderate effect size ($R^2 = 0.13$). Moderate effects have been observed in other studies (Ivanov, 2000; Linder-Pelz & Struening, 1985; Little et al., 2001). Polit and Beck (2008) also suggest that effects in most nursing studies are of a moderate size. A minimum sample of 155 participants was calculated (Appendix I) to be needed to detect

a population R^2 of .13 (moderate effect size) with up to 17 predictors, with a 5% chance of a Type I error (concluding that a relationship exists when it does not [Polit & Beck, 2012]), and with 20% chance of a Type II error (concluding that no relationship exists when it does [Polit & Beck, 2012]). This calculation was consistent with Green's (1991) estimated sample size of between 138 and 156, for 15 to 20 predictors at alpha 0.05, and a power of .80 for a medium effect size. A sample size of 200 was planned for recruitment to meet these minimum recommendations and to have a sample size large enough to minimize Type II error. Two hundred and sixteen participants were recruited.

Procedures

Women in this study were surveyed using a package of five self-administered questionnaires to obtain the necessary information to determine the relationship between the variables. Ethical approval from the University of Manitoba Education/Nursing Research Ethics Board was obtained (Appendix J). Data collection commenced on June 23, 2011 and ended on March 16, 2012. Once the target number of 200 participants was reached, a decision was made to discontinue recruitment and data collection; however, questionnaires continued to arrive in the mail, resulting in a final sample size of 216.

Due to privacy legislation (Personal Health Information Act [Manitoba Health, 2012]), it was important that potential subjects first be approached by the staff or provider in the setting. In order for the staff or the provider to determine the woman's eligibility to participate, a screening instrument tool with a brief script to use in approaching potential subjects (Appendix K) was developed.

Two main approaches were used to administer the questionnaires. One approach included the use of a research assistant in the setting. This approach was used in settings where a large number of pregnant women would likely meet the eligibility criteria, such as in the ambulatory care clinics in the two hospitals and in busy obstetrician offices. The staff in these settings screened the potential participant for eligibility criteria and asked the potential participant for permission to have the research assistant speak with her to further explain the study. The research assistant provided a verbal and written explanation of the study, answered any questions the potential participant had about the study or her participation, and obtained written consent (Appendix L) from those who wished to participate. The research assistant provided the woman with a suitable location to complete the questionnaires in the setting and collected the questionnaires upon completion. This approach resulted in the recruitment of 64.4% of the sample. The research assistant was familiar with maternity services and was trained. Training included: an explanation of the study; inclusion and exclusion criteria; ethical procedures including written consent; administration of the questionnaires; and administrative procedures.

The second approach was used in settings where there would be few potential participants at any point in time that might meet the eligibility criteria. This second approach required the staff or provider in the setting to request the permission of potential subjects to provide them with an invitation to participate (Appendix M). Those who expressed interest in the study were provided with a package of questionnaires to be completed. Potential participants were requested to complete the questionnaires

before birth and mail them back to the researcher. The package included study information (assent), a contact number should the woman have any questions about their participation (Appendix N), and instructions for completion of the questionnaires. A postage-paid, self-addressed return envelope was provided for return of the questionnaires. This second approach resulted in the recruitment of 33.3% of the sample. This second approach was also used in the settings where there was a research assistant, but the woman was unable to complete the questionnaires at the time. Only 2.3% of the sample was recruited with the research assistant providing the participant with the questionnaire package and requesting that the participant return the completed packages by mail. In both approaches an honorarium for participation was offered in the form of a $5.00 Tim Horton's gift certificate. Honorariums have been determined to be potentially beneficial for recruitment (Edwards et al., 2009). Approximately 35 minutes were required to complete the questionnaires.

Questionnaires were numbered for tracking purposes. A total of 286 questionnaire packages were provided to potential participants; 56 questionnaire packages were not returned. Fourteen of the returned questionnaires were not included in the sample. Of the 14 questionnaires not included in the sample, four of the questionnaires were incomplete and did not include any demographic information, nine did not meet eligibility criteria (completed after birth, were under 36 weeks of gestation, and resided outside of the Winnipeg Health Region), and one was received after data analysis had begun. There were 216 usable questionnaires (75.5% of the total number of questionnaires distributed). Privacy legislation in Manitoba does not permit collection

of information on the women who declined participation in the study, therefore making it impossible to identify the characteristics of the women who declined.

Self-administered questionnaires were considered to be more advantageous than face-to-face interviews for this particular study, as they minimized the possibility of the research assistant introducing bias and the tendency for subjects to provide answers that are more socially acceptable (Fitzpatrick, 1991). Some potential limitations to self-administered questionnaires include a disadvantage for those women with poor literacy abilities, the possibility of non-response bias, and poorer response rates, particularly when women are expected to mail the completed questionnaires back to the researcher (Polit & Beck, 2008). When subjects are expected to mail back the completed questionnaires, the researcher has less control over the circumstances in which the questionnaires are completed and by whom. However, mail methods have resulted in lower reported satisfaction, more criticism of both the health care services and the processes of care, and less need on the part of the participant to provide socially acceptable responses (Crow et al., 2002). Computer-assisted personal interviews and computer-assisted self-interviews were not considered as they were deemed not to be practical given the variety of settings and associated spaces within which the data was collected.

Instruments

A total of five instruments were used to collect information in this study. The five instruments were self-administered by the participants. The following sections describe each of the instruments in greater detail.

Expectations and satisfaction.

The Patient Expectations and Satisfaction with Prenatal Care instrument (Omar et al., 2001) was used to measure expectations and satisfaction with prenatal care. The PESPC is made up of two factors (expectations and satisfaction) and eight subscales with a total of 41 items. The expectations factor is made up of four subscales: complete care; provider continuity; personalized care; and other services. The satisfaction factor is made up of the following four subscales: information; provider care; staff interest; and system characteristics. The items measuring expectations are retrospective in nature. Expectations were an independent variable in this study and were analyzed in relation to the dependent variables, satisfaction, and the satisfaction subscales. The satisfaction subscales reflect the multidimensional nature of satisfaction by measuring several dimensions (subscales) of satisfaction, consistent with the literature (Fitzpatrick & Hopkins, 1983; Linder-Pelz, 1982b). Omar et al. (2001) used direct types of measures of satisfaction. The items ask the participants to what degree they expected particular aspects of care and to what degree they are satisfied with particular aspects of care with item stems such as: "I am satisfied with…" using a six-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *somewhat disagree*, 4 = *somewhat agree*, 5 = *agree*, and 6 = *strongly agree*); see Appendix A.

Omar et al. (2001) used both the literature and the findings of focus groups conducted with pregnant women to establish content and face validity. Omar and Schiffman (1995) conducted an exploratory study using semi-structured questions with three focus groups of pregnant women in their third trimester of pregnancy to identify

women's perceptions with regard to expectations about prenatal care and satisfaction with prenatal care. Overall agreement on the assignment of items to subscales and with the item placement in the subscales was achieved with a panel of experts. Revisions were then made. Omar et al., using data from a pilot test with 114 pregnant women, factor analyzed items measuring expectations and satisfaction, resulting in items being categorized into the four subscales of satisfaction (information, provider care, staff interest, and system characteristics). Satisfaction with prenatal care supported previous evidence that the concept of expectations is related to satisfaction (Omar et al., 2001). The instrument was tested by Omar et al. in a midsize Midwestern city in the U.S. with a sample of 587 pregnant women who had a minimum of four prenatal visits. Internal consistency coefficients for the expectations factor was $\alpha = 0.72$ and for the satisfaction factor was $\alpha = 0.94$ (Omar et al., 2001).

Items in each of the factors, expectations, and overall satisfaction were summed and divided by the total number of items to obtain a mean score between one and six, with a higher total mean score indicating higher expectations and greater satisfaction. Items in each of the satisfaction subscales were summed and divided by the total number of items in the subscales. The satisfaction factor of the PESPC (Omar et al., 2001) improves upon instruments previously used to measure satisfaction in several ways. The first way is that the instrument was developed on the basis of an expert panel and on what pregnant women identified as important to satisfaction using qualitative methodologies.

The acknowledgement of satisfaction as a multidimensional concept in the PESPC is a strength. Results indicate that measuring the subscales as dimensions of satisfaction likely tempered possible halo effects described by Crow et al. (2002), such as strong impressions about the quality of the doctor or the art of care. The expectations factor of the PESPC also permitted the measurement of expectations. Few studies on satisfaction with prenatal care have measured expectations (Omar et al., 2001) despite the recognition that expectations were the most important social psychological determinant of satisfaction (Linder-Pelz, 1982a). The content and structure of the PESPC is based on the assumption that women's expectations of prenatal care are based on their beliefs regarding prenatal health care; the care they receive; and their positive and/or negative attitudes toward prenatal care. PESPC assumes that women's satisfaction with prenatal care results from the congruency between the prenatal care they receive and their expectations of prenatal care. The expectations factor in the PESPC is followed by questions about satisfaction, which according to Crow et al. is a logical sequence and reflects the sequence of service delivery, where expectations are developed prior to receiving care and, although the expectations may change throughout a course of care, satisfaction is a result of the congruency between those expectations and the care received.

Quality of prenatal care.

The Quality of Prenatal Care Questionnaire (Heaman, Sword, et al., 2012) measures the quality of prenatal care experienced or received by women (Appendix B).

The quality of prenatal care was an independent variable in this study and was analyzed in relation to the dependent variables, satisfaction and the satisfaction subscales.

Items for this instrument were generated through a qualitative phase of in-depth interviews with 40 pregnant women and 40 health care providers from five cities in Canada (Sword et al., 2012). The instrument consists of 46 items, with a five point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree or disagree*, 4 = *agree*, and 5 = *strongly agree*). The instrument is made up of six subscales which have been supported by both exploratory and confirmatory factor analysis: information-sharing, anticipatory guidance, sufficient time, approachability, availability, and support and respect (Heaman, Sword, et al., 2012).

The QPCQ instrument (Heaman, Sword, et al., 2012) measured women's perceptions of quality of prenatal care by asking participants about whether they strongly agreed to strongly disagreed that they had experienced particular aspects of prenatal care. Examples of items include: "My prenatal care provider(s) prepared me for my birth experience" and "I was screened adequately for potential problems with my pregnancy." After reversing the scores on five items that are negatively worded, the scores for all items were summed and divided by the total number of items to obtain a mean score between 1 and 5, with a higher total mean score indicating better perceived quality of prenatal care. The QPCQ has been shown to have very good internal consistency reliability (Cronbach's alpha of 0.97 and test-retest reliability using an intra-class correlation coefficient of 0.87) (Heaman, Sword, et al., 2012).

Prenatal interpersonal processes of care.

Prenatal interpersonal processes of care (Wong et al., 2004) were measured using an instrument specifically designed for use with prenatal care. The PIPC is made up of three dimensions and seven subscales (Appendix C): communication (empowerment/self-care, elicitation of problems/responsiveness, and explanations of processes of care); patient-centered decision-making (one scale); and interpersonal style (friendliness and courteousness, lack of perceived discrimination, and respectfulness/emotional support). The three interpersonal dimensions were measured in this study as independent variables in relation to overall satisfaction and the satisfaction subscales. The PIPC dimensions have explained considerable amounts of variation in ratings of satisfaction (Wong et al., 2004).

The PIPC instrument (Wong, et al., 2004) consists of 30 items, with six response options (1 = *always*, 2 = *often*, 3 = *sometimes*, 4 = *rarely*, 5 = *never*, and 9 =*don't know*). The *don't know* response option was not able to be considered in scoring; it was coded as nine and therefore was not included in the scores. As the response options used in this instrument used lower numbers to reflect more positive interpersonal processes of care, all of the scores were reversed with the exception of the negatively worded items to facilitate the analysis and communication of results. The scores for all items in each of the three dimensions (communication, decision-making and interpersonal style) were then summed and divided by the total number of items to obtain a mean score between one and five, with a higher total mean score indicating better interpersonal processes of prenatal care.

The dimensions of the PIPC assisted in measuring women's experiences with prenatal care, as they were made up of items that ask how often particular interactions and interpersonal processes occurred while receiving prenatal care. Instruments that measure user experiences in health care studies ask participants to report events that did or did not occur in clinical encounters (Cleary & Edgman-Levitan, 1997). The content and face validity of the items were tested using focus groups with African-American, Latino, and Caucasian pregnant women. Wong et al. (2004) tested the PIPC using a telephone survey in an urban setting in the U.S. with 363 pregnant women of various racial and ethnic backgrounds who were receiving care from Medicaid health plans. Wong et al. found that the PIPC composite indices met criteria for reliable measures in the sample as a whole (Cronbach's alphas all > 0.70, and item index correlations all > 0.30).

Perceived stress.

The 4-item version of the Perceived Stress Scale (Cohen et al., 1983) was used to measure pregnant women's perceived stress (Appendix E). The item stems were modified to reflect the measurement of stress during pregnancy, with each question beginning with "During this pregnancy…" The items are rated on a five-point Likert scale (1 = *never*, 2 = *almost never*, 3 = *sometimes*, 4 = *fairly often*, and 5 = *very often*).

The PSS measures the degree to which persons appraise situations in their life as stressful and their sense of control over these situations (Cohen et al., 1983). For example, one of the items is as follows: "During your pregnancy, how often did you feel that you were unable to control the important things in your life?" The scale was scored

by reversing the responses to the two positively worded items, summing the responses for all items, and then dividing the sum by the number of items to obtain mean scores. Higher mean scores reflect higher perceived stress. The coefficient alpha reliability for the PSS ranges from .84 to .86 and short-term test-retest reliability was .85 with young adults (Cohen et al., 1983). Concurrent and predictive validity have been supported from correlations with depression scores and life event scales (Cohen et al., 1983). As the stem statements have been modified and the PSS was used with pregnant women in this study, the reliability and validity indicators published by Cohen et al. (1983) may not apply. Modified instruments may not validly reflect the construct being measured and the administration to a different population that may be more homogeneous than the general population may make the instrument less reliable. In this study the Cronbach alpha coefficient was 0.70, which is deemed to be acceptable (Polit, 2010).

Personal, pregnancy, and prenatal care characteristics.

Information regarding personal characteristics was collected using a survey developed for the study. These included socio-demographic information (e.g., education, income, employment, race/ethnicity, and marital status); pregnancy characteristics (e.g., obstetric history and medical conditions); information about prenatal care (e.g., number of visits and gestation at first prenatal visit); and type of prenatal care provider (Appendix D). Participants self-selected their race/ethnicity from a list of categories including an “other” category with a space for specification of “other” race/ethnicity. This “other” category was rarely used by participants. The information collected through this questionnaire was used to describe the sample. Select

variables, including age, education, employment, income, race/ethnicity, pregnancy risk, and type of prenatal care provider, were analyzed as independent variables to determine their association with the dependent variables, the overall satisfaction and the satisfaction subscales. Personal and pregnancy characteristics were also analyzed to determine if there was an association with the type of prenatal care provider.

Pregnancy risk was calculated from the items related to biomedical characteristics. The items were adapted from the Antepartum High Risk Pregnancy Scoring Form (Coopland et al., 1977). This instrument was formerly used in parts of Canada as a standard prenatal risk scoring form. It consists of 26 possible factors related to the pregnant woman's reproductive history, present medical condition, and complications of the present pregnancy. Coopland et al. (1977) weighted each factor (from one to three) by retrospectively relating it to known associations between the factor and negative outcomes. Total scores of zero to two indicate the participant is at low risk for obstetrical complications, scores of three to six indicate the participant is at high risk for obstetrical complications, and scores of seven or higher indicate extreme risk for obstetrical complications (Appendix U).

Data Analysis

The data obtained through the data collection processes described in the previous section were coded, entered into a PASW file, and analyzed by the researcher with the use of the PASW Statistics Grad Pack 17.0 for Windows (formerly known as SPSS). A statistician from the University of Manitoba, Department of Community Health Services, Biostatistical Consulting Service conducted the multiple regression analyses using SAS

statistical software. The following sections describe how missing data were managed, as well as the data analyses that were conducted.

Missing data.

Inherent in self-administered questionnaires are incomplete questionnaire responses (Fox-Wasylyshyn & El-Masri, 2005; Duffy & Jacobsen, 2005; Shrive, Stuart, Quan, & Ghali, 2006). Missing data, according to Duffy (2000), are items without answers, variables without observations, or data that may not be usable for one reason or another. All three types of missing data were observed in this study. Missing data can result in: reduced statistical power; threats to internal validity resulting in Type I errors; over or underestimation of effects; erroneous confidence intervals; underestimations of variance; and faulty regression coefficients (Polit, 2010). Missing data may also affect construct validity and external validity, thereby limiting the generalizability of the findings. This section identifies the procedures used to determine whether there were patterns in the missing data and the procedures used to treat the missing data prior to data analysis.

As identified earlier, fourteen questionnaire packages (6.1% of the questionnaires) were excluded from the sample. Of these fourteen packages, four participants did not complete the entire package, in particular, the demographic and pregnancy information. These packages were deemed to be unusable since information on the independent variables was missing. In the remainder of the questionnaires that made up the sample of this study, there were also items without answers, resulting in variables without observations. The seriousness of missing data within records depends

on how much data is missing and whether there are patterns of missing data (Tabachnick & Fidell, 2007). There are two types of missing data: random and systematic (Duffy & Jacobsen, 2005). When data are completely missing at random (MCAR), almost any procedure can be used to treat the data, but when data are missing in a systematic pattern, either missing at random (MAR) or not missing at random (NMAR), it may mean that some participants have chosen not to provide an answer to an item for a particular reason that is often now known to the researcher, thereby affecting the generalizability of the results (Duffy, 2000).

Amount of missing data.

Although there are no specific guidelines on how much missing data can be tolerated for a specific sample size (Tabachnick & Fidell, 2007), there have been some recommendations. Cohen and Cohen (1983) suggest that if a given variable has up to 10% of the data missing, the degree of missing data is not extensive and the variable should be retained and treated. Hertel (1976) suggests that at a completion rate of about 85% (15% missing cases), estimates of parameters do not differ significantly. Raymond and Roberts (1987) question any kind of analysis when 40% or more of the cases have missing data on a particular variable.

The percentage of missing observations was identified for each variable (Appendix O). In terms of the dependent variables, including overall satisfaction and each of the satisfaction subscales (information; provider care; staff interest; and system characteristics), the percentage of missing information ranged from 0.9% with satisfaction with provider care to 10.2% with overall satisfaction. Percentages of missing

data for the independent variables ranged from 0.9% to 13.9%. The higher percentage of missing data was found with the QPCQ (Heaman, Sword, et al., 2012).

The percentage of missing data with selected personal and pregnancy characteristics was lower, ranging from 0% or no missing data to 5.1%, with the higher percentage being for personal data such as income and years of education, not an unexpected finding as it has been repeatedly found that many participants do not provide information on income (Polit, 2010). The percentage of missing data for both the independent and dependent variables was less than 14% and determined to be not extensive (Hertel, 1976). Polit identifies that it also important to consider the amount of missing data within a case. New variables were created to determine the count of missing values for each of the instruments used in the study for each participant (Appendix P).

In the PIPC interpersonal style dimension, one of the items was missing 8.3% of the data. The item with 8.3% of missing data was worded as follows: "How often did you feel discriminated against by the providers or staff because you are receiving social assistance?" Those participants not receiving social assistance likely did not respond to this item. Within the same dimension of interpersonal style there is a similar item worded as follows: "How often did you feel discriminated against by the providers or staff because of how much money you have?" with only 2.3% of the data missing. Therefore the item making reference to social assistance was deleted from the dimension, resulting in 6.5% of missing data for the interpersonal style dimension.

In addition to missing data on the PIPC (Wong et al., 2004) dimensions, there was also a *don't know* response option that was not able to be considered in scoring. The

don't know responses were given a value of nine, and therefore could not be included in the scores. In effect, the *don't know* responses were considered missing data in the analyses, although they were not truly missing. Appendix Q identifies the percentage of *don't know* responses for each of the dimensions of the PIPC, ranging from 8.8% for the communication and the decision-making dimensions to 20.8% for the interpersonal style dimension (excluding the item removed as described above). Adding these percentages to the missing data increased the percentage of missing data for the communication dimension to 11.6%, for the patient-centered decision-making dimension to 10.2%, and for the interpersonal style dimension to 27.3% (excluding the deleted item).

Patterns of missing data.

The pattern of missing data is more important than the amount of missing data (Polit, 2010; Tabachnick & Fidell, 2007). It is important to determine if the missing data are MCAR, MAR, or MNAR (Duffy, 2000).

The data in this study were analyzed for patterns by testing for differences using an independent *t*-test on the dependent variable, as suggested by Duffy (2000). Overall satisfaction and the satisfaction subscale variables were recoded into two levels, cases with missing values and cases with no missing values, and *t*-tests were conducted to compare each of the continuous independent variables. Table R1 in Appendix R compares the two levels of satisfaction values with independent variable instrument scores. Table R2 in Appendix R compares the two levels of satisfaction values with the continuous level demographic and pregnancy characteristic variables. Additional personal characteristics (beyond the independent variables selected for analysis in this

study) were examined as well, to conduct a more thorough analysis of patterns. Chi-square analyses were conducted with nominal level independent variables (income; employment; race/ethnicity; marital status; and type of provider), with no significant differences noted between variables with missing and non-missing data. The results of independent samples *t*-tests indicate that those with missing scores versus those without missing scores on overall satisfaction and each of the satisfaction subscales were not significantly different in terms of most of the independent variables.

The probability of a missing response can be related to other variables in the data set (Fox-Wasylyshyn & El-Masri, 2005). The data in this study were tested for patterns by testing for differences using an independent *t*-test with each of the independent variable questionnaire scores and the continuous level demographic, personal, and pregnancy characteristic variables. Each of the variables was recoded into two levels as described above, and *t*-tests were conducted to compare each of the continuous variables for the two levels (missing and non-missing) with other variables (Appendix S). The significant results of the independent samples *t*-tests are identified in Appendix T. The magnitude of the differences in means for each of the variables was small (< .06). The few significant relationships among the variables and the small effects observed among those that were significant support the inference that the missing data are likely MAR and not MCAR or MNAR (Kline, 2011). The inference that the missing data are likely MAR should not affect the generalizability of the results to any large degree (Duffy, 2000).

Management of missing data.

Tabachnick and Fidell (2007) identify that if no meaningful differences are found between variables with missing data and variables without missing data, the missing data are unlikely to be systematic, and therefore how the missing data is managed is not important. Given that the data in this study appear to be MAR, and not MCAR, the methods of managing missing data identified in the literature were reviewed to determine the best way of managing the missing data while preserving the sample size as much as possible. Deletion methods are often not the best way to manage missing data as they decrease sample size and may affect relationships in the data (Duffy, 2000; Polit, 2010). Imputation, the "filling in" of missing scores with scores estimated to be what the score would have been had it not been missing, was selected as a method to manage missing data (Poli, 2010). Duffy (2000) identifies that imputation is a superior method of managing missing data as compared to deletion methods.

Case mean imputation, as suggested by Duffy (2000), Polit (2010), and Shrive et al. (2006), was used. The mean for each subscale/dimension in which there was missing data for each of the individual cases was calculated, and the missing score was substituted with the mean score on the particular subscale/dimension. Substituting means calculated from individual cases themselves is preferred to using mean substitution from the total sample mean, as this method has yielded better estimates (Duffy, 2005; Polit, 2010; Shrive et al., 2006). Shrive et al., in a study comparing imputation methods, identified that multiple imputation (a procedure whereby statistical software fills in the missing values several times, creating several sets of unique data bases, and combines

the result of each to produce an overall mean and *SD* for each missing value) was the most accurate method for dealing with missing data, however, Shrive et al. found that case mean imputation produced similarly favorable results, with 10% missing data. As Shrive et al. increased the percentage of missing data to 20% and 30%, multiple imputation became increasingly more accurate, and case mean imputation also continued to perform reasonably well with this percentage of missing data. The Kappa statistic indicated that case mean imputation was still in the range of "substantial agreement" with the population statistics. Shrive et al. state that case mean imputation is an appropriate and simple method for dealing with missing data and it may be more easily interpreted by potential consumers of research findings (medical readers) in this subject area.

Small subscales (5 items or less) with only one missing score were substituted using the case mean imputation method. In larger subscales, with missing data of less than 20% of the subscale/dimension, missing items were also substituted with the mean score on the particular subscale/dimension for that case. When 20% or more of the subscale/dimension data were missing for a particular case, data were left as missing. Duffy (2000) suggests that substitution should only occur with items in subscales with less than 20% of missing data. Shrive et al. (2006) caution researchers about ensuring that the items imputed measure a single construct. In this study, case mean imputation was used for each of the subscales (expectations; each of the satisfaction subscales), for each of the three dimensions of the PIPC (Wong et al., 2004), and for each of the subscales of the QPCQ (Heaman, Sword, et al., 2012) and the PSS (Cohen et al., 1983)

to ensure that the items that were used to derive the case mean imputations were also measuring a single construct. Pairwise deletion was then used for those participants with more than the threshold amount of missing data. Appendix O illustrates the percentage of missing data for each of the variables after imputation, and Appendix Q illustrates the percentage of missing data for each of the PIPC dimensions after imputation of both missing and *don't know* responses.

In summary, the amount of missing data on the dependent variables decreased from a range of 0.9% to 10.2% to a range of 0% to 1.9% after imputation. Percentages of missing data for the independent variable instrument scores decreased from a range of 0.9% to 13.9% to a range of 0.9% to 3.7% after imputation. Case mean imputation was deemed to be an acceptable method of preserving the sample size and preventing a reduction in statistical power. The sample size remained above the minimum sample size that was estimated for the study as described above. Based on the work of Shrive et al. (2006), the degree of missing data, the likelihood of the data being MAR, and the use of a case mean imputation method for the treatment of missing data, underestimations of variance and the possibility of faulty regression coefficients should have been kept to a minimum. The high proportion of missing data in the interpersonal style dimension of the PIPC (27%), however, supports the need to interpret findings on interpersonal style cautiously.

Data analyses conducted.

The sample in this study was described above. The continuous variables were described using measures of central tendency and percentiles. The nominal level

variables were described using proportions. Several nominal variables were collapsed for the analysis. The income, race/ethnicity, marital status, type of prenatal care provider, and parity (for analyses with the type of provider) were collapsed to ensure sufficient cell sizes for analysis. Annual family income was categorized into low income ($\leq$ $39,999), middle income (between $40,000 and $79,999), and high income ($80,000 and over). Race/ethnicity was collapsed from five categories, white, First Nations, Metis, Asian, and other) to four categories (white; Aboriginal, Asian; and other). Marital Status was collapsed from four categories (married, common-law, single, and other) to two categories (living with a partner and single). The type of prenatal care provider was also collapsed from five categories (obstetrician, family physician, midwife, family physician shared care, and nurse practitioner shared care) to three categories (obstetrician, family physician, and midwife) to ensure sufficient cell sizes for analysis. The family physician as a shared care category was collapsed with the family physician provider category. The nurse practitioner category was eliminated due to the few numbers of nurse practitioners whose clients participated in the study to protect the anonymity of the nurse practitioners.

Parity was analyzed as a continuous variable throughout the analysis, with the exception of the analysis of parity and type of prenatal care provider. Parity was collapsed into a dichotomous variable (nulliparous and multiparous), and analyzed using Chi-square, as the assumption of homogeneity of variance was violated for parity.

The level of significance of was set at $p < .05$. This level was appropriate given the sample size, the moderate correlations found in previous studies (Ivanov, 2000;

Linder-Pelz & Struening, 1985; Little et al., 2001), the level of the alpha coefficients of the instruments (between .70 and .97), and the nature of the variables (limited harm). Stricter levels of significance would be needed if the decisions based on the analysis had important consequences that could potentially cause harm (Polit & Beck, 2008).

Inferences cannot be made to the population with a convenience sample. However, Polit and Beck (2008) identify that it is important to use parametric statistics where possible. Pearson's correlation coefficient (*r*) was used to measure the direction and strength of the relationship between pregnant women's personal and pregnancy characteristics (continuous variables), interpersonal processes of care, quality of prenatal care, expectations, overall satisfaction and satisfaction with the following subscales: information; provider care; staff interest; and system characteristics.

One-way ANOVA was used to test for differences in mean scores between three or more groups. ANOVA decomposes total variability in a dependent variable into both variability attributable to the independent variable and all other variability such as individual differences. Variation between groups is contrasted with variation within groups to obtain an *F* ratio (Polit & Beck, 2008). Effect sizes were also calculated using eta-squared (0.01 reflects a small effect, 0.06 a medium effect, and 0.14 a large effect) (Cohen & Cohen, 1983; Cohen, Cohen, West, & Aiken, 2003). A significant *F* ratio does not, however, indicate which pairs of means are significantly different from one another. Tukey's Honestly Significant Difference (HSD) test was used to compare pairs of means where significant F ratios were obtained (Polit, 2010). Tamhane T2 was used when the test for homogeneity of variances was significant. The marital status variable was

analyzed using an independent *t*-test to determine if there were differences in overall satisfaction and with each of the satisfaction subscales between participants living with a partner and those who were single.

Chi-square tests were used to test for differences in proportions. Cross tabulations were used when cell sizes were insufficient for Chi-square analysis. Although differences were observed in the cross tabulation, it was not possible to determine if they were statistically significant as it is not possible to test for statistical significance using cross tabulations.

Regression analyses were used to identify the predictors of overall satisfaction and satisfaction with the satisfaction subscales (Munro, 2005; Polit, 2010). Multiple regression analysis is one of the most widely used statistical procedures and is appropriate for use in predicting the effects of the multiple independent variables on continuous or interval-level dependent variables (Munro, 2005; Polit & Beck, 2008). This analysis yielded a regression coefficient (*b*-weight) for each independent variable, indicating the expected change in the dependent variable (overall satisfaction and each of the satisfaction subscales) associated with a unit increase for each of the independent variables, holding constant the other independent variables referred to as predictor variables (Levin, Fox, & Forde, 2010). Although it is difficult to predict outcomes on the basis of cross-sectional data, the goal of this study was to identify the variables associated with satisfaction with prenatal care. The independent variables were referred to as predictors, consistent with the literature on statistical procedures. R^2 indicates the proportion of variance that can be explained on the basis of the combined simultaneous

effect of the independent variables on satisfaction (Polit & Beck, 2008). The value of R^2 and information on whether R^2 is statistically significant, however, are not necessarily very informative. As Polit (2010) states, it is not unusual to find an R^2 that is not significantly different from .00 or the R^2 could be highly significant, yet imprecise, particularly when the sample size is small. Confidence intervals are needed to fully understand how reliable the estimate of the population R^2 is. Confidence intervals were therefore reported. Bonferroni corrections were not employed in this study, as Bonferroni procedures have been shown to reduce statistical power by increasing the risk of a Type II error to unacceptable levels (Nakagawa, 2004). It was deemed to be preferable to report confidence intervals.

When correlations among independent variables are high, they add little predictive power to each other. The intercorrelations between variables and the variance inflation factor for each of the terms were used to determine evidence of collinearity (interrelatedness among independent variables). The variance inflation factor is an indicator of the amount of the variance that each regression coefficient increases relative to a situation in which all of the independent variables are uncorrelated (Cohen et al., 2003).

The nominal level variables (marital status, income, race/ethnicity, and type of prenatal care provider) were recoded into a series of dichotomous variables (dummy variables) that contrast participants in one category with a reference category (Polit, 2010). Where there were more than two categories, such as with race/ethnicity, income, and model of prenatal care, "c – 1" variables were created with a reference group. Table

1 illustrates how the "c – 1" variables were dummy coded. The recoded variables were then used as predictors in the multiple regression analysis.

Table 1

Dummy Coding of Nominal Variables with More than Two Categories

Variable	Original Code				
Race/Ethnicity		White X_1	Aboriginal X_2	Asian X_3	Other X_4
White	1	0	0	0	0
Aboriginal	2	0	1	0	0
Asian	3	0	0	1	0
Other	4	0	0	0	1
Income		$\leq$ \$39, 999 X_1	\$40,000 - \$79,999 X_2	$\geq$ \$80,000 X_3	
$\leq$ \$39, 999	1	1	0	0	
\$40,000 - \$79,999	2	0	1	0	
$\geq$\$80,000	3	0	0	0	
Provider type		Obstetrician X_1	Family Physician X_2	Midwife X_3	
Obstetrician	1	0	0	0	
Family physician	2	0	1	0	
Midwife	3	0	0	1	

For the first research question, the Pearson correlation coefficient was used to determine the relationships between expectations of prenatal care, perceived quality of care received, interpersonal processes of care, and overall satisfaction. For the second research question, the Pearson correlation coefficient was used to determine the relationships between pregnant women's personal and pregnancy characteristics, and the type of prenatal care provider with overall satisfaction and with the satisfaction

subscales. One-way ANOVA was used to test for differences in mean satisfaction scores between income, race/ethnicity, and participants receiving care from the different types of providers. An independent *t*-test was conducted to compare the satisfaction scores by marital status. The third research question was analyzed using multiple regression analyses to identify the most significant predictors of satisfaction.

Questions four through seven were secondary questions. Question four sought to identify the differences in personal and pregnancy characteristics of the participants receiving care from each of the different types of prenatal care providers. One-way ANOVA was used to test for differences in means between each of the provider types. Chi-square analyses were conducted to test for differences in proportions.

Questions five, six, and seven sought to identify the relationships between pregnant women's personal and pregnancy characteristics, as well as the type of provider, with the prenatal interpersonal processes of care, perceived quality of care, and expectations. As with the second question, the Pearson correlation coefficient was used to determine the relationships of the continuous variables and each of the dimensions of interpersonal processes of care (communication, decision-making, and interpersonal style), perceived quality of care, and expectations. One-way ANOVA was used to test for differences in mean quality of care, interpersonal process dimensions, and expectations. An independent *t*-test was conducted to compare the interpersonal process dimensions, perceived quality, and expectations by marital status.

Ethical Considerations

The study was approved by the Education/Nursing Research Ethics Board of the University of Manitoba (Appendix J), and approval for access was obtained from the relevant agencies before data were collected.

The recruitment process was consistent with the application of the Personal Health Information Act (Manitoba Health, 2012) in that providers or staff working within the settings screened and asked potential participants if they were interested in speaking with the research assistant about the project or if they would be interested in taking a package of questionnaires home. The consent process was consistent with the Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, 2010). Informed consent was obtained from all participants voluntarily participating in the study prior to the completion of questionnaires. In settings where a research assistant was available to recruit participants, written consent was obtained (Appendix L). In settings where there was no research assistant present, study information (Appendix N) in the packages of questionnaires was the source of information on the study, and consent was inferred by the return of the questionnaires. All questionnaires were anonymous and at no time were the participants asked to provide the name of their prenatal care providers, thereby assuring confidentiality for both the participants and the providers of prenatal care. The following information was included: the purpose of the study, participant responsibilities; the risks and benefits of participation; the voluntary

nature of participation; the assurance that refusal of participation would not affect services received; the ability to withdraw without services being affected; and the time commitment.

An honorarium for participation in recognition of the participant's time to complete the questionnaire package was offered in the form of a $5.00 Tim Horton's gift certificate. The monetary value of the honorarium was not considered to place undue inducement to participate in the study.

Participants were assured that their information would be kept strictly confidential and that they would not be identified by name in any reports of the study. Questionnaires were coded with a number. Consent forms were kept separate from the questionnaires. Questionnaires were stored in a locked filing cabinet drawer. Only the investigator, her dissertation committee advisor, the research assistant, and the statistical consultant had access to the data. Questionnaires will be kept for five years and then destroyed. There were no risks to participating in the study, and the only benefit was to be able to provide information that might improve prenatal care.

Chapter IV: Results

This chapter presents the results of the statistical analyses of the data obtained in this study. Personal, pregnancy, and prenatal care characteristics are summarized, followed by the descriptive analyses of the remaining variables: expectations, prenatal interpersonal processes of care (communication, decision-making, and interpersonal style), quality of prenatal care, overall satisfaction, and satisfaction with each of the subscales (satisfaction with information, provider care, staff interest, and system characteristics). Analyses of the data related to each of the research questions are presented.

Demographic Characteristics

The demographic characteristics of the participants (age, education, marital status, employment, hours worked/week, annual family income, race/ethnicity, country of birth, and area of residence) are shown in Table 2. There were 216 participants in the study. Participants ranged in age from 18 to 43 years (M = 29.55 [SD 5.47]). Education ranged from six years to 28 years, with a mean number of years of education of 14.72 (SD 3.35). More than half of the participants were married (n = 127, [59.3%]), 57 (26.6%) were living in a common-law relationship, and 29 (13.6%) reported being single.

Most (n = 153 [71.2%]) of the participants reported that they were employed during the pregnancy and worked on average 35.58 (SD 13.10) hours per week. The mode for annual family income was $100,000 and over. When annual family income was categorized into low income ($\leq$ $39,999), middle income (between $40,000 and

$79,999), and high income ($80,000 and over), 78 (38%) of the participants had low family incomes, followed by 76 (37%) with high family incomes, and 51 (25%) with middle family incomes. Low income was estimated at ≤ $39,999. Due to the income categories on the questionnaire, it was not possible to categorize low income at $30,000 or less. Statistics Canada (2009) defined low income before tax for a family of two adults at $30,903 in 2007. The ≤ $39,999 amount was estimated to be a reasonable definition of low income for this study given the limitations in data collection. Eleven participants (5.1%) did not report income.

The race/ethnicity categories were grouped due to the low frequencies in some of the categories. Over half (123 [57.5%]) of the participants were white, 43 (20.1%) being Aboriginal (29 [13.6%] First Nations; 14 [6.5%] Metis), 29 (13.4%) were Asian, and 19 (8.9%) reported race/ethnicity as "other." Most (171 [79.2%]) of the participants were born in Canada. Seventy (33.3%) of the participants, according to postal code, reported residing in Winnipeg's core area (inner core [R3A, R3B, R3C], outer core [R3E, R3G, R2X, R2W, R2L] and old St. Boniface [R2H]). The core area is made up of the least wealthy areas of the city based on income quintiles (University of Manitoba, 2003).

The majority of participants in the study can be described as mostly white, with a mean age of 29.5 years, with some post-secondary education, employed, married, with higher family incomes, and living in suburban Winnipeg. There is diversity within the sample, with 20% identifying as Aboriginal, 22% as visible minorities, 38% reporting annual family incomes of equal to or less than $39,999, and 33% reporting living in Winnipeg's inner city.

Table 3 illustrates the comparison of some of the sample characteristics to their representation in the City of Winnipeg according to the 2006 census (City of Winnipeg, 2006). This sample had a similar representation of families with household incomes of $\leq$ $39,999, a slightly higher percentage of Aboriginal participants, and a higher percentage of visible minorities as compared to the City of Winnipeg. The characteristics of this sample were deemed sufficiently similar to make the findings generalizable to the population in Winnipeg.

Table 2 *Demographic Characteristics of Participants*

Characteristic	*n*	Percentage	Mean (*SD*)
Age (years)	214		29.55 (5.47)
Education (years)	205		14.72 (3.35)
Marital Status			
Married	127	59.3%	
Common-law	57	26.6%	
Single	29	13.6%	
Other	1	0.7%	
Total	214		
Employment			
Employed	153	71.2%	
Not Employed	62	28.8%	
Total	215		
Hours/Week Worked	149		35.57 (13.10)
Annual Family Income			
No Income	7	3.4%	
Under $19,999	27	13.2%	
$20,000-$39,999	44	21.5%	
$40,000-$59,999	24	11.7%	
$60,000-$79,999	27	13.2%	
$80,000-$99,999	30	14.6%	
$100,000 and over	46	22.4%	
Total	205		
Race/Ethnicity			
White	123	57.5%	
First Nations	29	13.6%	
Metis	14	6.5%	
Asian	29	13.6%	
Other	19	8.9%	
Total	214		
Country of Birth			
Born in Canada	171	79.9%	
Philippines	10	4.7%	
Other	33	15.4%	
Total	214		
Community Area of Residence			
Fort Garry	23	10.9%	
Assiniboine South	18	8.6%	
St. Boniface	8	3.8%	
St. Vital	15	7.1%	
Transcona	7	3.4%	
River Heights	11	5.3%	
River East	37	17.6%	
Seven Oaks	5	2.4%	
St. James - Assiniboia	10	4.8%	
Inkster	11	5.2%	

Characteristic	*n*	Percentage	Mean (*SD*)
Downtown	40	19.1%	
Point Douglas	22	10.5%	
West St. Paul	3	1.4%	

Table 3

Comparison of Key Sample Characteristics with the City of Winnipeg

Characteristic	Sample in this Study	City of Winnipeg
Annual household income ≤ $39,999	38%	39.6%
Aboriginal	20%	12.1%
Visible minority	22%	16.3%

Note: City of Winnipeg statistics are according to 2006 census data (City of Winnipeg, 2006).

Pregnancy Characteristics and Perceived Stress

The pregnancy characteristics of the participants (gestation, parity, and pregnancy risk) are shown in Table 4. Gestational age at the time of questionnaire completion ranged from 36 to 41 weeks, with a mean gestational age of 38.10 (*SD* 1.70) weeks. Participants reported a range of parity from zero to seven with a mean of 0.83 (*SD* 1.22). Just over half (*n* = 117 [54.4%]) of the participants were nulliparous, with the remainder multiparous.

Pregnancy risk determination was made using the Antepartum High Risk Pregnancy Scoring Form (Coopland et al., 1977). In this sample, pregnancy risk scores ranged from 0 to 14. Over half, 120 (56.1%) of the participants, were considered to be at low risk for obstetrical complications, 78 (36.4%) were considered at high risk of obstetrical complications, and 16 (7.5%) were considered to be at extreme risk for obstetrical complications. There is a high SD (2.12) with the pregnancy risk score. As

the mode (1) and median reflect (2.0) that most of the participants were at low risk for pregnancy complications, there were fewer participants at high risk and extreme risk for obstetrical complications, an expected distribution in terms of pregnancy risk, given that the intervals in the scale were not equal (Coopland et al., 1977).

Perceived stress was measured using the PSS. The mean PSS score was 2.65 (*SD* 0.40). The 65th percentile indicated that 65% percent of the participants almost never perceived stress. There were no mean scores below two, meaning there were no participants who had never perceived stress. The 95th percentile indicated 95% of the participants reported almost never or sometimes perceiving stress, with the remainder (5%) of the participants perceiving stress fairly often. No participants had mean scores indicating they had perceived stress very often.

The participants in the study can be described as being on average at 38 weeks of gestation (term pregnancy) with their first pregnancy, at low risk for pregnancy complications, and as reporting that they almost never perceived stress. There was, however, a large percentage (43.4%) of participants who were at high or extreme risk for pregnancy complications in the sample.

Prenatal Care Characteristics

The prenatal care characteristics of the participants (gestation at pregnancy confirmation, gestation at first prenatal visit, time from appointment to actual visit, and total number of prenatal visits) are shown in Table 4. Data related to the type of prenatal care provider, setting, planned place of birth, and use of ancillary services, are discussed in the text. Participants reported a range of between 2 and 20 weeks of gestation and on

average 6.5 (*SD* 3.5) weeks of gestation when they first found out they were pregnant, with either a positive pregnancy test or when they saw a health care provider. Participants attended their first prenatal visit within a range of 3 to 21 weeks of gestation, and on average attended their first prenatal visit at 10.4 (*SD* 3.5) weeks of gestation. Participants identified that it took anywhere from 1 day to 12 weeks from the time they made their first appointment to the actual day of their visit. The total number of prenatal visits, including visits to endocrinologists and other providers, excluding fetal ultrasound visits, ranged from 4 to 35 visits, with an average of 12.6 (*SD* 5.1) prenatal visits. The total number of prenatal visits, excluding visits to endocrinologists and other non-obstetrical specialists, ranged from 4 to 30, with an average of 12.2 (*SD* 4.50) prenatal visits. Given that the mean gestational age of the participants at the time of data collection was 38 weeks, most participants would likely have at least one more prenatal visit before delivery.

Of note were the 12 (5.7%) participants who confirmed their pregnancies later (> 12 weeks of gestation), the 37 (18.4%) participants with late initiation of prenatal care (> 12 weeks of gestation), and the 42 (24.1%) participants who reported a long period of time (> four weeks) from appointment to actual visit. These findings indicate that some participants started prenatal care late, and for some it took a long time to get an initial prenatal visit (up to 12 weeks).

Table 4

Pregnancy and Prenatal Care Characteristics (continuous variables)

Characteristic	*n*	Range	Mode	Median	Mean (*SD*)
Gestation (weeks)	216	36-41	36.0	38.00	38.10 (1.70)
Parity	215	0-7	0.0	0.00	0.83 (1.22)
Pregnancy risk score	214	0-14	1.0	2.00	2.65 (2.12)
Perceived stress	214	2-4	3.0	2.75	2.65 (0.40)
Pregnancy confirmation (weeks)	212	2-20	4.0	6.00	6.53 (3.5)
Gestation at 1st prenatal visit	201	3-21	12.0	11.00	10.44 (3.5)
Appointment to visit (weeks)	174	.14-12	1.0	2.00	3.17 (2.6)
Number prenatal visits	213	4-35	10.0	12.00	12.56 (5.1)
Number of prenatal visits (excluding non-obstetrical specialist visits)	213	4-30	10.0	12.00	12.18 (4.5)

In terms of the type of prenatal care provider, 121 (58.2%) participants received prenatal care from an obstetrician, followed by 33 (15.9%) from a midwife, 29 (13.9%) from a family physician, 14 (7.2%) from a family physician in a shared care with an obstetrician, and 10 (4.8%) from nurse practitioner also in shared care with a family physician or obstetrician. Ninety-four (43.7%) participants received prenatal care in private physicians' offices, followed by 74 (34.4%) participants in hospital ambulatory care facilities, and 44 (20.5%) in community clinics.

Hospitals were identified as the planned place of birth for 205 (95%) of the participants; only 11 (5.1%) participants planned an out-of-hospital birth. Out-of-hospital births included a planned home birth or a birth planned at the Birth Centre. Planned place of birth was as reported by the participants rather than actual site of birth. Pregnant

women also use a variety of other prenatal services. In this study, 77 (36.2%) participants had at least one visit to the emergency department or the obstetrical triage unit of a hospital. The obstetrical triage unit is an area where a pregnant woman can be assessed for labour or concerns (≥ 20 weeks of gestation). In this study, 24 (11.1%) participants had at least one hospitalization.

In addition to hospital services, there were several ancillary community services and programs that participants accessed. In this study, 39 (18.1%) of the participants accessed the Healthy Baby/Healthy Start programs. Seventy-two (33.3%) participants attended prenatal classes.

In summary, participants were on average at 6.5 weeks of gestation when they first found out they were pregnant and attended their first prenatal visit at 10.4 weeks of gestation. Most participants had planned to deliver in a hospital. One-third of the participants had at least one visit to an emergency department or obstetrical triage unit of a hospital, and approximately one-tenth had at least one hospitalization during this pregnancy. One-fifth of the participants used ancillary services such as Healthy Baby programs and one-third attended prenatal classes.

Descriptive Analysis of the Study Variables

The descriptive analysis of personal characteristics (age, income, education, ethnicity, and marital status), pregnancy characteristics (parity, pregnancy risk, and perceived stress), and type of prenatal care provider were presented above. The descriptive analysis of the remaining independent variables (expectations, perceived quality of prenatal care, and interpersonal processes of care [communication, decision-

making, and interpersonal style]) are presented, followed by a descriptive analysis of the dependent variables (overall satisfaction, and the satisfaction subscales: information, provider care, staff interest, and system characteristics). Descriptive statistics for these variables are summarized in Table 5. The percentiles were examined to determine the percentage of participants reporting various levels of experience or satisfaction.

Expectations.

Expectations were measured using the expectations factor of PESPC instrument (Omar et al., 2001). Mean scores can range from one to six, with higher scores indicating higher expectations. The mean score for expectations was 4.07 (*SD* 0.68), meaning most participants somewhat agreed they had expectations for complete care, for provider continuity, for personalized care, and to receive other services, such as those from a nutritionist, public health nurse, or social worker. The percentiles indicated that 40% of the participants somewhat disagreed, disagreed, or strongly disagreed that they expected complete care, provider continuity, personalized care, and to receive other services.

Perceived quality of prenatal care.

Perceived quality of prenatal care was measured using the QPCQ (Heaman, Sword, et al., 2012). Mean scores can range from one to five, with higher scores meaning perceived higher quality of prenatal care.

The mean score for perceived quality of prenatal care was 3.88 (*SD* 0.57), meaning on average the participants reported that they agreed they had experienced quality prenatal care characterized by information-sharing, being provided with anticipatory guidance, sufficient time, provider approachability, availability, and support

and respect. Five percent of the participants reported they disagreed they had experienced quality prenatal care.

Subscales and items in the QPCQ (Heaman, Sword, et al., 2012) were examined to determine the percentage of participants who scored less than or equal to two. The highest percentages of these scores were found within the anticipatory guidance subscale, followed by the approachability subscale. Within the anticipatory guidance subscale there were several items with high percentages of participants reporting they disagreed or strongly disagreed with the statements. Seventy (32.6%) participants disagreed they were given adequate information about depression in pregnancy; this was followed by 58 (27%) who disagreed that they were linked to programs in the community that were helpful to them; 57 (26.4%) disagreed they had been given enough information to meet their needs about breastfeeding; 52 (24.0%) disagreed that their prenatal care provider gave them options for their birth experience; 50 (23.1%) disagreed that their prenatal care provider spent time talking with them about their expectations for labour and delivery; 42 (19.4%) disagreed they received adequate information about their diet during pregnancy; 42 (19.4%) disagreed that their prenatal care provider was interested in how their pregnancy was affecting their life; and 41 (19.0%) disagreed that their prenatal care provider prepared them for their birth experience.

In the approachability subscale, 31 (14.4%) participants felt rushed during their prenatal care visits. There were two statements in the availability subscale with higher percentages of participants reporting they disagreed or strongly disagreed. The first statement was about being able to reach their prenatal care provider by phone when

necessary (*n* = 27, 12.5%), followed by the statement that they could always reach someone in the office/clinic if they needed something (*n* = 26, 12%).

Prenatal interpersonal processes of care.

The PIPC instrument (Wong, et al., 2004) was used to measure the three dimensions of interpersonal care, including communication, patient-centered decision-making, and interpersonal style. Mean scores can range from one to five, with higher scores indicating the participant had experienced the dimension more frequently.

The mean score for the communication dimension was 4.02 (*SD* 0.75), meaning on average the participants identified they had often experienced communication that led to a perception of empowerment/self-care, that their problems were elicited and were responded to, and that they often received explanations of care. A small proportion of participants (8.7%) reported they had rarely or never experienced communication.

The items with the highest percentages of scores of less than or equal to two in the communication dimension were found with items related to empowerment/self-care. The item asking participants how often providers told them what they could do to take care of themselves and their pregnancy at home was rarely or never experienced by 53 (25.2%) of the participants; this was followed by 51 (24.2%) participants who rarely or never experienced providers making them feel that their everyday activities such as diet and lifestyle would make a difference in their pregnancy; and 42 (20%) participants who rarely or never experienced providers making them feel that following their advice would make a difference to their health or the health of their baby.

The mean score for patient-centered decision-making was 3.27 (*SD* 1.14), meaning on average the participants identified that they had sometimes experienced patient-centered decision-making. Percentiles indicated that 30% of the participants had rarely or never experienced patient-centered decision-making. Examination of the item responses identified that 80 (38.8%) participants rarely or never had providers ask them if they were able to follow their advice; this was followed by 76 (36.7%) participants who rarely or never had providers ask how they felt about the advice; and 59 (28.6%) participants who were rarely or never asked if they were comfortable following the advice. A smaller number, 30 (14.4%) participants, reported they had rarely or never experienced providers trying to include them in decision-making.

The mean score for interpersonal style was 4.39 (*SD* 0.44), meaning on average the participants reported they had often experienced an interpersonal style with their provider that resulted in less perceived discrimination, characterized by respectfulness, being emotionally supportive, as well as being friendly and courteous. Only 0.5% of the participants had rarely or never experienced this type of interpersonal style with their provider.

In terms of interpersonal processes of care, participants on average experienced positive communication and a positive interpersonal style from their provider. Participants sometimes experienced patient-centred decision-making. However, approximately one-third of the participants reported that they rarely or never experienced patient-centred decision-making.

Satisfaction with prenatal care.

The satisfaction factor of the PESPC instrument (Omar et al., 2001) was used to measure overall satisfaction. The four subscales of the satisfaction factor, including information, provider care, staff interest, and system characteristics, were also measured. Mean scores can range from one to six, with higher scores indicating higher satisfaction. The frequency distributions were also examined to determine the percentage of participants who reported they somewhat disagreed or somewhat agreed (scores of three and less than five) to further examine the percentages of participants in these categories. Items with scores of less than or equal to three in each of the subscales were examined to identify the items with which participants reported they strongly disagreed, disagreed, and somewhat disagreed they were satisfied (Table 6).

The mean score for overall satisfaction was 4.77 (*SD* 0.69), meaning on average the participants agreed they were overall satisfied with their prenatal care. The distribution is multimodal; as a dependent variable in the multiple regression analysis, the distribution could bias the standard error and affect the confidence intervals, however, all the assumptions for the multiple regression analysis were met, making this bias unlikely. The percentiles demonstrated that 10% of the participants scored equal to or less than 3.78, meaning they had somewhat disagreed or disagreed they were satisfied with prenatal care. The frequency distribution indicated 58.9% of the participants reported they somewhat disagreed or somewhat agreed that they were overall satisfied.

The mean score for satisfaction with information was 4.60 (*SD* 0.91), meaning on average the participants agreed they were satisfied with the information provided, the

explanations, and the discussions they had with their provider. In examining the percentiles, it was noted that 20% of the participants scored equal to or less than 3.83, meaning that they had somewhat disagreed or disagreed they were satisfied with the information they had been provided. The frequency distribution indicates that 35.1% of the participants reported that they somewhat disagreed or somewhat agreed that they were satisfied with the information provided. Seventy-seven (35.8%) participants somewhat disagreed, disagreed, or strongly disagreed they were satisfied with explanations that the provider gave them about what they could expect about parenting a newborn; this was followed by the way the provider prepared them for labour and delivery (*n* = 73, 34.0%); and with the explanation provided about medical procedures (*n* = 23, 10%).

The mean score for satisfaction with provider care was 5.24 (*SD* 0.73), meaning on average the participants agreed they were satisfied with the care they received from their provider. Examination of the percentiles demonstrated only 5% of the participants scored equal to or less than 3.98, meaning they had somewhat disagreed or disagreed they were satisfied with the care they received from their provider. The frequency distribution indicates that 26% of the participants reported that they somewhat disagreed or somewhat agreed that they were satisfied with information. Twenty-eight or 13% somewhat disagreed, disagreed or strongly disagreed they were satisfied with having to repeat their story every time they came for a visit; this was followed by 9 (4.2%) who were dissatisfied with the way they were made to feel that they were not wasting their provider's time. Although participants were dissatisfied with the way their provider

treated them, the respect they were shown from their providers, being able to ask questions without embarrassment, and the quality of care provided, the percentages of participants reporting dissatisfaction were less than those reporting dissatisfaction with the other items described in this subscale.

The mean score for satisfaction with staff interest was 4.79 (*SD* 0.85), meaning on average the participants agreed that they were satisfied with the interest that the staff demonstrated in them. Examination of the percentiles demonstrated only 10% of the participants scored equal to or less than 3.73, meaning they had somewhat disagreed or disagreed they were satisfied with staff interest. The frequency distribution indicates that 46% of the participants reported they somewhat disagreed or somewhat agreed they were satisfied with staff interest. Thirty-seven (17.3%) identified they were dissatisfied with the time that staff spent talking about things that were of interest to them; followed by 19 (8.9%) who were dissatisfied with the way staff expressed concern about their overall personal situation; and19 participants or 8.9% who were dissatisfied with the interest and concern the staff had shown them.

The mean score for satisfaction with system characteristics was 4.57 (*SD* 0.81), meaning on average the participants agreed they were satisfied with the system characteristics, including waiting time, parking, clinic characteristics, having all the recommended tests, and the number of prenatal visits. The percentiles demonstrated that 20% of the participants scored equal to or less than 3.9, meaning that they had somewhat disagreed or disagreed they were satisfied with system characteristics. The frequency distribution indicates that 60.9% of the participants reported they somewhat disagreed or

somewhat agreed they were satisfied with system characteristics. Almost half of the participants, 106 (49.1%), expressed dissatisfaction with parking facilities; this was followed by 52 (24.1%) reporting dissatisfaction with the amount of time they waited to be seen by their provider. Dissatisfaction was also reported by 49 (22.7%) participants regarding the total amount of time they spent at the office/clinic; and 38 (17.7%) reported dissatisfaction with how easy it was to get prenatal care early in their pregnancy (before the fourth month). Thirty-four (16%) reported that they were dissatisfied with their ability to schedule a prenatal visit at a convenient time, followed by 28 (13.0%) reporting they were dissatisfied with how easy it was to reschedule their prenatal visits. Participants also expressed dissatisfaction with the waiting room facilities of the office/clinic (n = 52, 24.1%) and with the examination rooms (n = 27, 12.5%).

In summary, the majority of the participants had somewhat agreed that they had expectations for their prenatal care, perceived that they had experienced quality prenatal care, and reported that they had often experienced communication and a positive interpersonal style with their provider and only sometimes experienced patient-centered decision-making. Participants were overall satisfied with the care they received and reported satisfaction with each of the satisfaction subscales. The participants were most satisfied with the care they received from their provider, followed by the staff interest, and they were least satisfied with the information they received and with the system characteristics.

Table 5

Descriptive Statistics for Expectations, Quality of Prenatal Care, Interpersonal Processes, and Satisfaction Scores

Variable (*n*)		Range	Mode	Median	Mean (*SD*)
Expectations	(213)	2.15-5.85	4.23	4.15	4.07 (0.68)
QPCQ	(211)	2.15-4.89	3.76; 3.85; 4.02*	3.87	3.88 (0.57)
PIPC					
Communication	(206)	1.30-5.00	4.30; 4.60**	4.20	4.02 (0.75)
Decision-making	(205)	1.00-5.00	3.50	3.50	3.27 (1.14)
Interpersonal style	(195)	2.80-5.00	5.00	4.46	4.39 (0.44)
Overall satisfaction	(212)	2.45-6.00	5.27; 5.54; 6.00*	4.80	4.80 (0.69)
Information	(215)	2.20-6.00	5.00	4.66	4.60 (0.91)
Provider care	(216)	2.17-6.00	6.00	5.18	5.24 (0.73)
Staff interest	(213)	1.83-6.00	5.00	5.00	4.79 (0.85)
System characteristics	(215)	2.30-6.00	5.00	4.60	4.57 (0.81)

Note: QPCQ = Quality of Prenatal Care Questionnaire; PIPC = Prenatal Interpersonal Processes of Care; *Three modes exist. **Two modes exist.

Table 6

Satisfaction Subscale Mean Scores and Percentage of Scores indicating Dissatisfaction

Satisfaction subscales	Item	*N*	Mean (*SD*)	*n* (percent) scores ≤ 3
Information	Explanation of what was going to happen during visit	216	4.83 (.93)	17 (7.9)
	Explanation about medical procedures	216	4.75 (.99)	23 (10.6)
	How things going with the pregnancy	216	5.00 (.89)	11 (5.1)
	Kinds of things discussed during visit	216	4.91 (.92)	15 (6.9)
	Explanation of what to expect re parenting	215	4.00 (1.43)	77 (35.8)
	Preparation for labour and delivery	215	4.10 (1.47)	73 (34.0)
Provider care	The way treated by the provider	216	5.32 (.77)	4 (1.9)
	Respect shown from the provider	216	5.38 (.72)	4(1.9)
	Quality of care received	216	5.28 (.80)	6 (2.8)
	Made to feel that not wasting provider's time	216	5.23 (.85)	9 (4.2)
	Able to ask questions without embarrassment	216	5.31 (.83)	5 (2.3)
	Not having to repeat their story at every visit	216	4.96 (1.24)	28 (13.0)
Staff interest	Way staff expresses concern about personal situation	214	4.81 (1.02)	19 (8.9)
	Time staff spends talking about things of interest	214	4.44 (1.11)	37 (17.3)
	Way treated by staff	214	5.04 (.83)	10 (4.7)
	Time staff takes even though no problems with pregnancy	214	4.83 (.94)	15 (7.0)
	Interest and concern staff show	213	4.79 (.97)	19 (8.9)
	Way staff deals with medical problems	213	4.83 (.97)	18 (8.5)
System characteristics	Amount of time waited to be seen by provider	216	4.40 (1.40)	52 (24.1)
	Total amount of time spent at office/clinic	216	4.41 (1.33)	49 (22.7)
	Parking facilities	216	3.56 (1.54)	106 (49.1)
	Waiting room facilities	216	4.26 (1.24)	52 (24.1)
	Examination rooms	216	4.75 (.99)	27 (12.5)
	Ability to schedule prenatal visits at a convenient time	216	4.82 (1.18)	34 (15.7)
	How easy to reschedule prenatal visits	215	4.79 (1.11)	28 (13.0)
	How easy to get prenatal care early in pregnancy	215	4.59 (1.28)	38 (17.7)
	Having all the recommended tests	216	5.03 (.99)	16 (7.4)
	Number of prenatal visits in first 6-7 months	216	5.09 (.84)	10 (4.5)

Note: Scores ≤ 3 includes items scored as "Somewhat disagree", "Disagree" or "Strongly Disagree."

Research Questions

There were three primary research questions in this study (questions one, two, and three). The first two research questions determined the relationships between the independent variables and satisfaction. The third primary question identified the most significant factors related to satisfaction with prenatal care using multiple regression techniques. The four remaining questions (questions four, five, six, and seven) were secondary questions. Question four identified if there were any differences in personal and pregnancy characteristics among the participants receiving prenatal care from the different types of prenatal care providers. Questions five and six explored the relationships between personal and pregnancy characteristics with perceived quality of care and interpersonal processes of care. The last question explored the relationships of personal and pregnancy characteristics with expectations for prenatal care.

Personal characteristic variables included the following: age, education, income, race/ethnicity, and marital status. Pregnancy characteristic variables included parity, pregnancy risk, and perceived stress. The type of prenatal care provider was also an independent variable.

Question 1: Expectations, quality, interpersonal processes, and satisfaction.

The first primary research question sought to determine the relationships between expectations of prenatal care, perceived quality of care, interpersonal processes of care, and overall satisfaction, as well as each of the satisfaction subscales. Correlation coefficients between these variables are shown in Table 7.

Expectations were not related to overall satisfaction or any of the satisfaction subscales, with the exception of a small negative significant relationship found between expectations and satisfaction with system characteristics (r = -.136, n = 212, p =.047). The higher the expectations for prenatal care, the less satisfied the participants were with system characteristics.

Perceived quality of care was significantly correlated with both overall satisfaction and all of the satisfaction subscales. The greater the perceived quality of prenatal care, the more satisfied participants were overall with prenatal care (r = .873, n = 208, p = < .001). Likewise, participants who perceived they received high quality prenatal care, were more satisfied with information (r = .779, n = 211, p = < .001), with provider care (r = .777, n = 211, p = < .001), with staff interest (r = .718, n = 208, p = < .001), and with system characteristics (r = .661, n = 211, p = < .001).

Significant positive correlations were also found between interpersonal processes of care dimensions and overall satisfaction, as well as with each of the satisfaction subscales. The more often the participants experienced communication with their provider, the greater the overall satisfaction (r = .667, n = 203, p = < .001), satisfaction with information (r = .622, n = 205, p = < .001), satisfaction with provider care (r = .609, n = 206, p = < .001), satisfaction with staff interest (r = .564, n = 204, p = < .001), and satisfaction with system characteristics (r = .474, n = 205, p = < .001).

The more often participants experienced patient-centred decision-making, the more satisfied they were overall (r = .570, n = 203, p = < .001), with information (r = .617, n = 204, p = < .001), with provider care (r = .559, n = 203, p = < .001), with staff

interest (r = .445, n = 204, p = < .001), and with system characteristics (r = .406, n = 204, p = < .001). Likewise, the more often participants experienced a positive interpersonal style with their provider, the greater the overall satisfaction (r = .650, n = 192, p = < .001), satisfaction with information (r = .526, n = 194, p = < .001), satisfaction with provider care (r = .611, n = 195, p = < .001), satisfaction with staff interest (r = 540, n = 193, p = < .001), and satisfaction with system characteristics (r = .508, n = 194, p = < .001).

Question 2: Personal and pregnancy characteristics, type of provider, and satisfaction.

The second primary research question sought to determine the relationships between pregnant women's personal and pregnancy characteristics, and the type of prenatal care provider with satisfaction. The correlations between the continuous personal and pregnancy variables (age, education, parity, pregnancy risk, perceived stress) and satisfaction are shown in Table 7. The results of relationships between income, race/ethnicity, and marital status with satisfaction are shown in Tables 8, 9, and 10. Analyses between type of prenatal care provider and satisfaction are shown in Table 11.

There were no significant correlations found between age or pregnancy risk with satisfaction. The more years of education the participants had, the higher their satisfaction with provider care (r = .202, n = 205, p = .004); the higher the parity, the less satisfied participants were with provider care (r = -.137, n = 215, p = .044). Likewise,

the higher the perceived stress, the lower the satisfaction with provider care (r = -.151, n = 214, p = .027).

There were no statistically significant differences in overall satisfaction scores or in any of the satisfaction subscale scores among the three income groups, or among the four race/ethnicity groups. There were no statistically significant differences in overall satisfaction scores or in the satisfaction subscale scores for participants living with a partner and those who were single.

There were statistically significant differences between the participants who received care from the different types of prenatal care providers in overall satisfaction scores and in each of the satisfaction subscale scores. Large effect sizes were observed for overall satisfaction (.15), as well as with satisfaction with system characteristics (.17). Post-hoc comparisons indicated that the mean overall satisfaction scores for participants receiving prenatal care from a midwife (M = 5.40, SD 0.59) were significantly higher than the scores for participants receiving prenatal care from a physician (obstetrician, M = 4.65, SD 0.67, p = < .001; family physician, M = 4.86, SD 0.60, p = .001). There were no significant differences between the participants receiving care from an obstetrician and the participants receiving care from a family physician for overall satisfaction.

Post-hoc comparisons indicated that the mean score for satisfaction with system characteristics for participants receiving care from a midwife (M = 5.30, SD 0.59) was significantly different than the score for participants receiving care from an obstetrician (M = 4.38, SD 0.80, p = < .001) and from a family physician (M = 4.63, SD 0.73, p =

.001). There were no significant differences between the participants receiving care from an obstetrician or those receiving care from a family physician for satisfaction with system characteristics.

A moderate effect (.09) was observed with differences in satisfaction with information between the participants receiving prenatal care from a midwife and those receiving care from an obstetrician only. Post-hoc comparisons indicated that the mean score for satisfaction with information of participants receiving care from a midwife (*M* = 5.16, *SD* 0.81) was significantly higher ($p < .001$) only from those receiving care from an obstetrician (*M* = 4.41, *SD* 0.90).

A moderate effect (.07) was also observed with differences in satisfaction with provider care with the participants receiving care from a midwife. Post-hoc comparisons indicated that participants receiving care from a midwife were significantly more satisfied with provider care (*M* = 5.67, *SD* 0.75; $p < .001$), as compared to those receiving care from an obstetrician (*M* 5.14, *SD* 0.67; $p < .001$), as well as compared to those receiving care from a family physician (*M* = 5.26, *SD* 0.73; $p = .030$). There were no significant differences observed in terms of satisfaction with provider care between the participants receiving care from an obstetrician and those receiving care from a family physician.

A moderate effect (.11) was observed with satisfaction with staff interest. Post-hoc comparisons indicated the mean scores for satisfaction with staff interest for participants receiving care from a midwife (*M* = 5.45, *SD* 0.60) were significantly higher than both those receiving care from an obstetrician (*M* = 4.64, *SD* 0.87, $p < .001$) and

those receiving care from a family physician (*M* = 4.85, *SD* 0.73, *p* = .005). There were no significant differences observed in terms of satisfaction with staff interest between the participants receiving care from an obstetrician and those receiving care from a family physician.

The participants receiving care from a midwife were significantly more satisfied on all measures of satisfaction as compared to the participants receiving care from an obstetrician or a family physician with the exception of satisfaction with information, where there were no significant differences observed between participants receiving care from a midwife and the participants receiving care from a family physician.

Table 7

Pearson r Correlations: Personal Characteristics, Quality, Interpersonal Processes, with Satisfaction

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Satisfaction															
2. Information	.835**														
3. Provider care	.808**	.679**													
4. Staff interest	.833**	.630**	.650**												
5. System	.847**	.548**	.516**	.570**											
6. Expectations	-.131	-.055	-.125	-.122	-.136*										
7. Communication	.667**	.622**	.609**	.564**	.474**	-.062									
8. Decision making	.559**	.617**	.421**	.445**	.406**	-.039	.668**								
9. Interpersonal style	.650**	.526**	.611**	.540**	.508**	-.140	.624**	.467**							
10. Quality	.873**	.779**	.777**	.718**	.661**	-.122	.739**	.560**	.630**						
11. Age	-.024	-.015	.011	-.034	-.046	.013	-.036	-.073	-.019	.022					
12. Education	.102	.038	.202**	.083	.061	.057	.085	-.001	.146*	.155*	.366**				
13. Parity	-.021	.029	-.137*	-.062	.046	-.041	-.058	.029	-.112	-.009	.173*	-.343**			
14. Pregnancy risk	-.031	-.031	-.005	-.034	-.039	-.061	-.041	-.129	-.089	.036	.451**	.162*	.149*		
15. Perceived stress	-.107	-.118	-.151*	-.055	-.051	.119	-.152*	-.114	-.228**	-.177*	-.035	.072.	.053	.185**	

Note. * Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed).

Table 8

ANOVA Results for Income and Satisfaction, Quality, Interpersonal Processes, and Expectations

Variable	Income ≤ $39,999			Income $40,000-$79.999			Income ≥ $80.000				
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*F*	*p*
Satisfaction	77	4.80	0.67	48	4.78	0.77	76	4.74	0.68	0.153	.858
Information	78	4.72	0.91	50	4.67	0.95	76	4.45	0.91	1.925	.149
Provider care	78	5.20	0.70	51	5.20	0.86	76	5.32	0.68	0.687	.504
Staff interest	77	4.79	0.80	49	4.71	0.88	76	4.84	0.90	0.352	.704
System	78	4.62	0.76	50	4.61	0.90	76	4.51	0.81	0.419	.659
Communication	75	4.02	0.77	49	4.06	0.73	74	3.99	0.74	0.132	.876
Decision-making	74	3.37	1.08	48	3.50	1.10	74	3.01	1.14	3.363	.037
Interpersonal	72	4.30	0.54	43	4.04	0.06	71	4.43	032	2.594	.077
QPCQ	77	3.85	0.56	49	3.96	0.64	75	3.89	0.56	0.558	.573
Expectations	77	4.15	0.70	50	4.13	0.69	76	3.99	0.66	1.180	.309

Note. QPCQ = Quality of Prenatal Care Questionnaire.

Table 9

ANOVA Results for Race/Ethnicity and Satisfaction, Quality, Interpersonal Processes, and Expectations

Variable	White			Aboriginal			Asian			Other				
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*F*	*p*
Satisfaction	120	4.81	0.70	43	4.72	0.62	28	4.63	0.76	19	4.84	0.68	0.656	.580
Information	122	4.58	0.92	43	4.58	0.88	29	4.68	0.96	19	4.75	0.86	0.269	.848
Provider care	123	5.35	0.73	43	5.07	0.73	29	5.03	0.80	19	5.26	0.57	2.510	.060
Staff interest	121	4.88	0.85	43	4.71	0.70	28	4.52	0.93	19	4.84	0.97	1.510	.213
System	122	4.60	0.89	43	4.59	0.71	29	4.38	0.77	19	4.65	0.72	0.654	.581
PIPC Communication	119	4.05	0.67	40	3.91	0.84	27	4.09	0.80	19	3.98	0.91	0.464	.708
Decision-making	119	3.22	1.16	38	3.32	1.02	27	3.60	1.02	19	3.18	1.25	0.928	.428
Interpersonal	112	4.45	0.37	40	4.22	0.53	26	4.40	0.48	16	4.38	0.44	44.593*	.052
QPCQ	119	3.95	0.58	43	3.76	0.51	28	3.81	0.61	19	3.87	0.60	1.413	.240
Expectations	121	3.98	.63	43	4.01	0.62	29	4.60	0.65	19	3.99	0.83	7.343	<.001

Note. * = Welch Robust Test of Equality of Means; QPCQ= Quality of Prenatal Care Questionnaire.

Table 10

Independent t-Test Comparison of Participants Living with a Partner and Single Participants for Satisfaction, Quality and Interpersonal Processes

	Living with Partner	Single			
Instrument	*M (SD)*	*M (SD)*	*df*	*t*	*p*
Overall Satisfaction	4.79 (0.71)	4.88 (0.57)	(208)	-0.635	.526
Information	4.57 (0.93)	4.78 (0.78)	(211)	-1.201	.231
Provider care	5.25 (0.74)	5.22 (0.68)	(212)	0.159	.874
Staff interest	4.77 (0.87)	4.90 (0.71)	(209)	-0.772	.441
System characteristics	4.57 (0.83)	4.61 (0.70)	(211)	-0.218	.828
PIPC Communication	3.99 (0.75)	4.16 (0.70)	(202)	-1.116	.266
Decision-making	3.17 (1.15)	3.83 (0.90)	(201)	-3.387	.002
Interpersonal style	4.40 (0.42)	4.33 (0.53)	(191)	0.761	.447
QPCQ	3.88 (0. 59)	3.93 (0.47)	(207)	-0.497	.620
Expectations	4.08 (0.68)	3.40 (0.74)	(209)	0.606	.545

Note. *P* (two-tailed); CI = confidence interval of the difference; PIPC = Prenatal Interpersonal Processes of Care; QPCQ = Quality of Prenatal Care Questionnaire.

Table 11

ANOVA Results for Provider Type and Satisfaction, Quality, Interpersonal Processes, and Expectations

	Obstetrician			Family Physician			Midwife				
Variable	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*F*	*p*
Satisfaction	120	4.61	0.67	43	4.82	0.60	31	5.39	0.57	17.051	<.001
Information	120	4.41	0.90	43	4.71	0.79	31	5.16	0.81	10.129	<.001
Provider care	121	5.14	0.67	43	5.26	0.73	33	5.67	0.75	7.511	<.001
Staff interest	121	4.64	0.87	43	4.85	0.73	31	5.45	0.60	12.523	<.001
System	120	4.38	0.80	43	4.63	0.73	33	5.30	0.59	19.120	<.001
Communication	116	3.94	0.80	40	4.03	0.60	33	4.43	0.71	11.470*	<.001
Decision-making	115	3.10	1.12	42	3.29	1.11	32	3.84	1.06	5.556	.005
Interpersonal	108	4.29	0.44	38	4.44	0.47	32	4.66	0.25	18.384*	<.001
QPCQ	118	3.77	0.54	43	3.90	0.54	31	4.46	0.39	22.000	<.001
Expectations	120	4.07	0.73	28	3.97	0.66	32	4.09	0.61	0.193	.901

Note: * = Welch Robust Test of Equality of Means; QPCQ = Quality of Prenatal Care Questionnaire.

Question 3: Significant predictors of satisfaction with prenatal care.

This research question identified the most significant predictors of overall satisfaction with prenatal care and satisfaction with the following subscales: satisfaction with information, satisfaction with provider care, satisfaction with staff interest, and satisfaction with system characteristics.

The correlation coefficients (Table 7) of the independent variables were inspected for evidence of multicollinearity. Intercorrelations among the independent variables were less than 0.78 and deemed to be acceptable. Polit (2010) suggests the avoidance of a set of independent variables when there are intercorrelations that are 0.85 or higher. A variance inflation factor (VIF) was also calculated for each of the terms in the regression equation, excluding the intercept. There were no terms with VIFs above three. Generally, VIFs exceeding four warrant further investigation, while VIFs exceeding 10 indicate serious multicollinearity (Cohen et al., 2003; Simon, 2004). All the assumptions for the multiple regression analysis were met.

The impact of the following independent variables on overall satisfaction and each of the satisfaction subscales was explored using multiple regression analyses: expectations, interpersonal processes of care (communication, decision-making, and interpersonal style), perceived quality of prenatal care, pregnancy risk score, parity, age, years of education, marital status, income, race/ethnicity and type of prenatal care provider.

All of the independent variables were entered into the equation simultaneously. In successive steps, variables were removed from the equation beginning with the variables that were the most non-significant ($p < 0.1$), and then each of the non-significant variables was added back into the equation to determine if there were any changes in the regression coefficients in terms of magnitude, width of effects, changes in confidence intervals, and evidence of confounding variables or multicollinearity (change > 20 - 25%). The process of removing and entering variables into the equation was done using a data-driven approach and not a computer-automated approach. None of the effect estimates changed more than 20% when predictors were removed from the model, and there was no evidence of confounding variables or collinearity. The proportion of variance (R^2) in satisfaction in the reduced models was nearly as high as the full models, with the subset being good predictors of satisfaction. The models remained relatively stable when the non-significant variables were removed. All the models performed adequately with model diagnostics in the form of residual analyses. The reduced (parsimonious) multiple regression models are presented in Table 12.

The interpersonal style dimension of the PIPC and the perceived quality of care were predictors of overall satisfaction, accounting for 80% of the variance. In terms of the satisfaction subscales, the patient-centered decision-making dimension of the PIPC, perceived quality of care, and race/ethnicity accounted for 66% of the variance in satisfaction with information.

The interpersonal style dimension of the PIPC, perceived quality of care, and years of education were significant predictors of satisfaction with provider care, accounting for 70% of the variance. The interpersonal style dimension of the PIPC and perceived quality of care were significant predictors of satisfaction with staff interest. Annual family income of $40,000 - $79,999 was a significant predictor of lower satisfaction with staff interest. The model accounted for 55% of the variance in satisfaction with staff interest. Four variables were significant predictors of satisfaction with system characteristics, including the interpersonal style dimension of the PIPC, perceived stress, perceived quality of care, and type of prenatal care provider (midwife), and accounted for 56% of the variance in satisfaction with system characteristics.

Perceived quality of care was a significant predictor of overall satisfaction and for each of the satisfaction subscales. The interpersonal style dimension of the PIPC was a significant predictor in all but one of the satisfaction measures, satisfaction with information, where patient-centered decision-making was a significant predictor. Personal characteristics were not predictors of overall satisfaction, but some personal characteristics (race/ethnicity, years of education, and income) were predictors of the subscales of satisfaction. Perceived stress and type of prenatal care provider were predictors of satisfaction with system characteristics.

Table 12

Multiple Regression for Predictors of Overall Satisfaction and the Satisfaction Subscales

Variable	*b*	SE	*t*	*p*	95% Confidence Limits	Overall R^2
Overall Satisfaction (*n* = 188)						.80
Intercept	0.341	0.218	1.57	0.119	-0.883 – 0.770	
Interpersonal style	0.215	0.063	3.40	<.001	0.090 – 0.340	
Quality of care	0.912	0.048	19.0	<.001	0.817 – 1.006	
Satisfaction with information (*n* = 198)						.66
Intercept	-0.036	0.266	-0.14	0.892	-0.561 – 0.489	
Decision-making	0.177	0.040	4.31	<.001	0.096 – 0.257	
Quality of care	1.028	0.079	12.95	<.001	0.871 – 1.184	
Race/Ethnicity - Aboriginal	0.175	0.100	1.81	0.072	0.015 – 0.366	
Race/Ethnicity - Asian	0.249	0.114	2.19	0.030	0.025 – 0.473	
Race/Ethnicity - Other	0.247	0.127	1.95	0.053	-0.003 – 0.498	
Satisfaction with provider care (*n*=180)						.70
Intercept	0.846	0.311	2.72	0.007	0.232 – 1.460	
Interpersonal style	0.336	0.088	3.81	<.001	0.162 – 0.510	
Quality of care	0.693	0.064	10.89	<.001	0.567 – 0.819	
Years of education	0.019	0.008	2.30	0.023	0.003 – 0.036	
Satisfaction with staff interest (*n* = 178)						.55
Intercept	0.016	0.450	0.04	0.971	-0.872 – 0.904	
Interpersonal style	0.267	0.128	2.08	0.039	0.013 – 0.520	
Quality of care	0.949	0.095	9.97	<.001	0.761 – 1.137	
Income $40,000-$79,999	-0.277	0.115	-2.40	0.017	-0.504 – -0.496	
Satisfaction with system (*n* = 173)						.56
Intercept	0.398	0.572	-0.62	0.488	-1.528 – 0.732	
Interpersonal style	0.305	0.122	2.49	0.014	0.063 – 0.546	
Perceived stress	0.221	0.107	2.07	0.040	0.010 – 0.432	
Quality of care	0.771	0.097	7.94	<.001	0.579 – 0.962	
Midwife as Provider	0.360	0.123	2.92	0.004	0.166 – 0.602	

Question 4: Personal, pregnancy characteristics, and type of provider.

This research question was a secondary question and identified whether there were differences in personal and pregnancy characteristics of the participants receiving care from the different types of prenatal care providers. The providers included midwives, obstetricians, and family physicians.

There were no statistically significant differences in age, education, pregnancy risk, and perceived stress among the participants who received care from the three different types of prenatal care providers (Table 13). A Chi-square test for independence indicated there was not a significant association between parity and type of provider ($X^2_{(df=2)} = 4.985$, p = .083). There were greater percentages of nulliparous participants receiving care from a physician (obstetrician and family physician) and a greater percentage of multiparous participants receiving care from a midwife (Table 14).

The Chi-square test for independence indicated that the association between family income and type of prenatal care provider was not significant. The cross tabulation for family income and type of prenatal care provider is shown in Table 15. Middle and high-income participants (≥ $40,000) made up the largest proportions of participants receiving care with each of the types of providers. The largest proportions (43.7% and 31.6% respectively) of low-income participants (≤ $39,999) were observed with the obstetricians and family physicians. The midwives had a small proportion (18.8%) of low-income participants.

Chi-square analysis was not possible with race/ethnicity and type of prenatal care provider as the cell sizes were too small. The cross tabulation is in Table 16. In terms of race/ethnicity, there were greater proportions of white participants with each of the different types of prenatal care providers. The midwives had the greatest proportion of white participants (93.9%) and the smallest proportion of Aboriginal participants (3.0%), Asian participants (0%), or participants of "other" race/ethnicity (3.0%). The

obstetricians and family physicians had larger proportions of First Nations participants (19.2% and 28.6% respectively), and Asian participants (19.2% and 9.5% respectively). It was, however, not possible to determine if these differences were statistically significant as cross tabulations do not test for significance.

The Chi-square test for independence indicated that the association between marital status and type of prenatal care provider was not significant ($X^2_{(df=2)} = 4.903$; $p = .086$). The cross tabulation for marital status and type of provider is shown in Table 17. In terms of marital status, a greater proportion of participants were living with a partner when each of the different types of providers was considered. The midwives had the greatest proportion of participants living with a partner (96.9%) and the smallest proportion of single participants (3.1%). The participants who received prenatal care from the different types of providers were not statistically different in terms of personal and pregnancy characteristics.

Table 13

ANOVA Results for Personal and Pregnancy Characteristics and Type of Provider

Personal Characteristic	Obstetrician			Family Physician			Midwife				
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*F*	*p*
Age	120	29.62	5.66	42	28.86	6.09	33	30.39	3.98	0.723	.487
Education	115	14.64	3.52	41	14.24	3.46	33	15.97	2.59	2.676	.071
Pregnancy Risk	121	2.91	2.44	43	2.49	2.02	33	2.45	1.84	0.865	.423
PSS	121	2.66	0.41	43	2.67	0.42	33	2.52	0.34	1.876	.156

Note. PSS = Perceived Stress Scale.

Table 14

Cross Tabulation: Parity and Type of Provider

Type of Provider	*Nulliparous* *n* (%)	*Multiparous* *n* (%)	Total *n* (%)
Obstetrician	66 (54.5)	55 (45.5)	121 (100)
Family Physician	28 (65.1)	15 (34.9)	43 (100)
Midwife	13 (39.4)	20 (60.6)	33 (100)
Total	107 (54.3)	90 (45.7)	197 (100)

Table 15

Cross Tabulation: Income and Type of Provider

Type of Provider	**Income**			
	≤ $39,999 *n* (%)	$40,000-$79,999 *n* (%)	≥ $80,000 *n* (%)	Total *n* (%)
Obstetrician	52 (43.7)	24 (20.2)	43 (36.1)	119 (100)
Family Physician	12 (31.6)	11 (28.9)	15 (39.5)	38 (100)
Midwife	6 (18.8)	13 (40.6)	13 (40.6)	32 (100)
Total	70 (37%)	48 (25.4)	71 (37.6)	189 (100)

Table 16

Cross Tabulation: Race/Ethnicity and Type of Provider

Type of Provider	White *n* (%)	Aboriginal *n*(%)	Asian *n* (%)	Other *n* (%)	Total *n* (%)
Obstetrician	61 (50.8)	23 (19.2)	23 (19.2)	13 (10.8)	120 (100)
Family Physician	21 (50.0)	12 (28.6)	4 (9.5)	5 (11.9)	42 (100)
Midwife	31 (93.9)	1 (3.0)	0 (0.0)	1 (3.0)	33 (100)
Total	113 (57.9)	25 (12.8)	27 (13.8)	19 (9.7)	195 (100)

Table 17

Cross Tabulation: Marital Status and Type of Provider

Type of Provider	Living with a Partner *n* (%)	Single *n* (%)	Total *n* (%)
Obstetrician	103 (85.8)	17 (14.2)	120 (100)
Family Physician	34 (79.1)	9 (20.9)	43 (100)
Midwife	31 (96.9)	1 (3.1)	32 (100)
Total	117 (60.0)	27 (13.8)	195 (100)

Question 5: Personal and pregnancy characteristics, type of provider, and interpersonal processes.

Research question 5 was also a secondary research question. It identified the relationships between pregnant women's personal and pregnancy characteristics, type of prenatal care provider, and prenatal interpersonal processes of care. Correlation coefficients are shown in Table 7.

Age, parity, and pregnancy risk were not significantly correlated with any of the dimensions of interpersonal care. A small positive significant correlation was found between education and interpersonal style (r = .146, n 185, p = .048), indicating that the higher the number of years of education, the more often participants experienced a positive interpersonal style. Small negative significant correlations were also found with perceived stress and communication (r = -.152, n 206, p = .029), as well as with perceived stress and interpersonal style (r = -.228, n 195, p = .001). Participants reporting higher levels of perceived stress experienced communication and a positive interpersonal style with their provider less frequently. This finding between perceived stress and communication and interpersonal style was similar to the significant negative correlation observed between perceived stress and satisfaction with provider care (Table 7).

There was only one statistically significant difference between the income groups and patient-centered decision-making (Table 8). Post-hoc comparisons indicated that the mean score for decision-making was statistically different (p = .048) for the middle (M = 3.50, SD 1.10) and high-income groups (M = 3.01, SD 1.14). The middle-income group

($40,000-$79,999) reported experiencing patient-centered decision-making more often than the high-income group (≥$80,000).

A statistically significant difference (p = .002) with a moderate effect (.06) was observed between single participants (M = 3.83, SD 0.90) and those living with a partner (M = 3.17, SD 1.15), with patient-centered decision-making. Single participants reported they significantly experienced patient-centered decision-making more often than participants living with a partner (Table 10).

Statistically significant differences between type of prenatal care provider and all of the three interpersonal processes of care dimensions were found (Table 11). Medium effects were observed between type of provider and communication (.06), decision-making (.06), and interpersonal style (.10). Levene's test for homogeneity of variances indicated that the assumption of homogeneity of variance was violated for both communication and interpersonal style, but not for decision-making. The Welch Robust Test for Equality of Means was used for communication and interpersonal style, and statistically significant differences were found between the groups on communication (Welch statistic = 11.470, p <.001) and interpersonal style (Welch statistic = 18.384, p < .001). Post-hoc comparisons using Tamhane's T2 test indicated that the mean score on communication for those receiving prenatal care from a midwife (M = 4.43, SD 0.44) was significantly higher than the scores for those participants receiving care from an obstetrician (M = 3.94, SD 0.80; p < .001) or a family physician (M = 4.03, SD 0.60; p < .005). Likewise, for interpersonal style, the mean score for those receiving prenatal care from a midwife (M = 4.66, SD 0.25) was significantly higher than the scores for

participants receiving care from an obstetrician (*M* = 4.29, *SD* 0.44; *p* <.001) or from a family physician (*M* = 4.44, *SD* 0.47; p = .047). Post-hoc comparisons using a Tukey HSD test indicated that the mean decision-making score for participants receiving care from a midwife (*M* = 3.84, *SD* 1.06.) was significantly higher (*p* = .006), with a moderate effect (.06), than the score for those receiving care from an obstetrician (*M* = 3.10, *SD* 1.12), but not compared to those receiving care from a family physician.

Participants receiving care from a midwife reported significantly more frequent experiences with all three interpersonal dimensions (communication, decision-making, and interpersonal style) as compared to participants receiving care from an obstetrician. The same observations were made between those receiving care from a midwife and those receiving care from a family physician, with the exception of experiences with patient-centered decision-making, where no significant differences were observed. No significant differences were observed between the participants receiving care from an obstetrician and those receiving care from a family physician.

Question 6: Personal and pregnancy characteristics, type of provider, and quality of prenatal care.

This secondary research question identified the relationships between pregnant women's personal and pregnancy characteristics, type of prenatal care provider, and perceived quality of prenatal care. Correlation coefficients are shown in the correlation matrix (Table 7).

No significant correlations were observed between age, parity, pregnancy risk, and perceived quality of care. A small significant positive correlation was found between

years of education and perceived quality of prenatal care (r = .155, n 200, p .029). The greater the number of years of education, the higher the reported perceived quality of prenatal care. A small negative significant relationship was found between perceived stress and perceived quality of care (r = -.177, n 209, p .010). Higher levels of perceived stress were associated with lower perceptions of the quality of prenatal care. This finding is similar to the negative correlations observed between perceived stress and satisfaction with provider care, with perceived stress and communication, as well as with interpersonal style.

There were no statistically significant differences between the income groups or the race/ethnicity groups and perceived quality of prenatal care (Table 8 and Table 9 respectively). No statistically significant differences between marital status and interpersonal processes of care were found (Table 10).

There were statistically significant differences between the participants receiving care from the different types of providers and perceived quality of care (Table 11). A large effect (.19) was observed. Post-hoc comparisons indicated that the mean quality of care score for those receiving prenatal care from a midwife (M = 4.46, SD 0.39) was significantly higher than the score for those participants receiving care from an obstetrician (M = 3.77, SD 0.54, p < .001) or a family physician (M = 3.90, SD 0.54, p < .001). No significant differences in perceived quality of care were found between the participants receiving care from an obstetrician or a family physician. These findings were similar to the significant results obtained with the type of provider and satisfaction, and the type of provider and interpersonal processes of care.

Question 7: Personal and pregnancy characteristics, type of provider, and expectations.

Research question 7 was the last secondary research question in this study. It identified the relationships between pregnant women's personal characteristics, perceived stress, type of prenatal care provider, and expectations. Correlation coefficients are shown in the correlation matrix (Table 7).

There were no significant correlations found between age, education, parity, pregnancy risk, perceived stress, and expectations. Nor was there any evidence of an impact of income and type of prenatal care provider on expectations. Significant differences were found in race/ethnicity in terms of expectations. A moderate effect (.10) was observed. Post-hoc comparisons indicated that expectations were significantly higher in those participants who were Asian (M = 4.60, SD 0.65; p = < .001), as compared to whites (M = 3.98, SD 0. 63; p < .001), Aboriginal participants (M = 4.01, SD 0.65; p = < .001), and those of "other" race/ethnicity (M = 3.99, SD 0.83; p = .009). No significant differences were found between any of the other race/ethnic groups and expectations of prenatal care (Table 9). No statistically significant differences were found between marital status and expectations (Table 10).

Summary

Based on the results of the analyses, the research questions were answered as follows:

1. A small negative association between expectations and satisfaction with system characteristics was found. Perceived quality of care and interpersonal processes of

care (communication, patient-centered decision-making, and interpersonal style) were significantly positively correlated with overall satisfaction and each of the satisfaction subscales (information; provider care; staff interest; and system characteristics).

2. Of the personal and pregnancy characteristics, education was positively associated with satisfaction with provider care. Parity and perceived stress were negatively associated with satisfaction with provider care. The participants who received prenatal care from a midwife were significantly more satisfied than participants receiving care from an obstetrician or a family physician in terms of overall satisfaction, as well as with each of the satisfaction subscales, with the exception of satisfaction with information, where no differences were observed between the participants receiving care from a midwife or from a family physician.
3. Perceived quality of care was a significant predictor in overall satisfaction and with all of the satisfaction subscales. The interpersonal style dimension of the PIPC was a significant predictor in all but one of the satisfaction measures, satisfaction with information, where patient-centered decision-making was a significant predictor. Select personal characteristics were predictors of the subscales of satisfaction. Perceived stress and receiving care from a midwife were predictors of satisfaction with system characteristics.
4. There were no statistically significant differences between personal and pregnancy characteristics and the type of prenatal care provider.

5. Of the personal and pregnancy characteristics, education was positively associated with the experience of a positive interpersonal style with the prenatal care provider. Perceived stress was negatively associated with positive communication and interpersonal style with the provider. Single participants significantly had more patient-centered decision-making experiences than participants who were living with a partner. There was also a significant difference between the income groups and patient-centered decision-making, with higher mean patient-centered decision-making scores observed with the middle ($40,000-$79,999) and higher (≥ $80,000) annual income groups as compared to the lower income group (< $39,999). Participants receiving care from a midwife reported significantly more experiences with all three interpersonal dimensions (communication, decision-making, and interpersonal style) as compared to participants receiving care from an obstetrician. The same observations were made between those receiving care from a midwife and those receiving care from a family physician, with the exception of experiences with patient-centered decision-making, where no significant differences were observed.
6. A significant positive correlation was observed between education and perceived quality of prenatal care, and a negative relationship was found between perceived stress and perceived quality of prenatal care. The mean scores for perceived quality of prenatal care were significantly higher for participants receiving care from a midwife as compared to those receiving care from a physician.
7. The mean score for Asians on expectations of prenatal care was significantly higher than the scores of any of the other racial/ethnic groups.

Chapter V: Discussion

This chapter discusses the key findings of this study. The findings are discussed in relation to the empirical findings in the literature and Donabedian's (2003) structure, process, and outcome framework, which guided the study. The strengths and limitations of the study are described and then followed by a discussion of the overall implications for future research, practice, education, and policy.

Satisfaction has been studied both as an independent variable and a dependent variable. In this study, satisfaction was considered a dependent variable and studied in relation to structural and process factors associated with satisfaction.

This study makes an important contribution to the body of knowledge on satisfaction with prenatal care. The findings in this study provide support for Donabedian's (2003) proposed relationships between structure, process, and outcome. The quantitative approach used to measure expectations, experiences, and satisfaction enabled the collection of data from a large number of women in a Canadian context. The identification of factors associated with women's satisfaction with prenatal care provides the much needed information on the process and system variables associated with satisfaction with prenatal care. This information has the potential to guide system changes to improve pregnant women's satisfaction with prenatal care.

Predictors of Satisfaction

The findings in this study were consistent with the literature on satisfaction with prenatal care where women have reported high levels of satisfaction (Erci & Ivanov, 2004; Hildingsson & Radestad, 2005; Langer et al., 2002; Laslett et al., 1997; Montasser

et al., 2012). Although most of the participants were overall satisfied with prenatal care and satisfied with each of the subscales (somewhat agreed, agreed, and strongly agreed), examination of frequency distributions indicated that a proportion of the participants reported they somewhat disagreed or somewhat agreed that they were overall satisfied. These findings suggest that a proportion of the participants evaluated care as, perhaps, mediocre. The proportion of participants not fully agreeing that they were satisfied or dissatisfied ranged from 26% for satisfaction with provider care to a high of 60.9% for satisfaction with system characteristics. Examination of the items that participants scored as somewhat disagreed, disagreed, or strongly disagreed provide further information on the particular aspects of care that could be improved.

Perceived quality of care was a significant predictor of overall satisfaction and on all the satisfaction subscales. Interpersonal style was a significant predictor of all but one of the satisfaction measures, satisfaction with information, where patient-centered decision-making was a significant predictor. Personal characteristics were not a predictor of overall satisfaction, but some characteristics (race/ethnicity, years of education, and income) were predictors of select subscales of satisfaction. Perceived stress and the type of prenatal care provider were predictors of satisfaction with system characteristics. The small confidence intervals observed with each of the predictors indicate that the findings were fairly precise.

Perceived quality of care in this study was measured with the QPCQ (Heaman, Sword, et al., 2012). Only 5% of participants identified they disagreed to strongly disagreed that they had experienced quality prenatal care. Traditionally quality of care

has been defined in terms of clinical aspects. It has only been since the work of Donabedian that the importance of the patient's subjective perspective has come to be recognized as important (Donabedian, 1988). Qualitative studies on satisfaction with prenatal care have highlighted the importance of the quality of prenatal care to women (Douglas et al., 2007; Handler et al., 1996). As identified earlier, no instrument was available to measure the quality of prenatal care until the development of the QPCQ by Heaman, Sword, et al. (2012). This was one of the first studies to measure perceived quality of prenatal care. The large positive correlations observed between perceived quality of prenatal care and satisfaction, were not unexpected given the logical assumption that perceived quality would be related to satisfaction.

Two recent studies identified similar core features of the quality of prenatal care (Goberna-Tricas, Banus-Gimenez, Placio-Tauste, & Linares Sancho, 2011; Sword et al., 2012). Goberna-Tricas et al. (2011) investigated the opinions of postpartum women in focus groups regarding the quality of maternity care received. The following core features of quality were identified: safety (technical competence of the provider), the human dimension of the relationship between the provider and user, and structural aspects that determine the context within which care is provided (Goberna-Tricas et al., 2011). Similarly, Sword et al. (2012), in their qualitative study on pregnant women's and providers' perspectives of the quality of prenatal care, found that the following three main categories emerged: the structure of care, clinical care processes, and interpersonal care processes. The QPCQ (Heaman, Sword, et al., 2012) was developed on the basis of the findings of Sword et al. and tested in a Canadian context.

The core features are akin to Donabedian's (2003) structure and process aspects of care, and they reflect the importance of the structural aspects of care, the technical aspects of care, and the interpersonal processes of care to satisfaction. The finding that the perceived quality of prenatal care is a predictor of overall satisfaction, as well as satisfaction with each of the satisfaction subscales, provides support for both Donabedian's (2003) framework and Gottlieb et al.'s (1994) work. Gottlieb et al. reported that perceived quality was found to affect satisfaction. These findings are an important contribution to knowledge of the factors related to satisfaction with prenatal care. Perceived quality of care will be further discussed with each of the satisfaction subscales.

Interpersonal style was, likewise, an important predictor of overall satisfaction, as well as satisfaction with each of the subscales, with the exception of satisfaction with information. Interpersonal style was measured using the interpersonal dimension of the PIPC (Wong et al., 2004). On average, participants identified that they had often experienced an interpersonal style with their provider that resulted in less discrimination; this style was characterized by respectfulness and being emotionally supportive, friendly and courteous. Very few participants (0.5%) indicated that they had rarely or never experienced positive interpersonal style in prenatal care. The importance of these predictors (perceived quality and interpersonal style) will be examined more specifically in the discussion of the predictors for each of the satisfaction subscales. The examination of satisfaction as a multidimensional concept was shown to provide more useful information than if satisfaction had been considered as only a one-dimensional concept.

Overall satisfaction.

Interpersonal style and perceived quality of prenatal care were predictors of overall satisfaction, accounting for 80% of the variance. The regression coefficient (*b* weight) for perceived quality of care was 0.912, meaning that for each unit increase in the perception of quality of care, a 0.912 unit increase in overall satisfaction is estimated ($p < .0001$). This finding is consistent with the findings of Larkins, Windsor, and Trebble, (2012). Larkins et al. conducted a study in a gastroenterology clinic with 227 patients using a questionnaire developed from a variety of sources designed to reflect experiential quality. Larkins et al. found the quality of the consultation itself was the most important aspect of a satisfactory experience. The factors considered most important to satisfaction included being seen by the physician, having confidence in the treatment plan, receiving clear and appropriate explanations, being listened to, having an opportunity to express important concerns, and having their needs recognized. The role of environmental issues was considered less important (Larkins et al., 2012). The Larkins et al. study demonstrates the importance of measuring quality and satisfaction in health care. As mentioned earlier, this study was the first to measure the relationship between perceived quality of prenatal care and satisfaction using an instrument specific to the quality of prenatal care.

The regression coefficient (*b* weight) for interpersonal style was 0.215, meaning, that for each unit increase in the experience of interpersonal style, a 0.215 unit increase in overall satisfaction is estimated ($p = .0008$). These findings are consistent with the literature as well. Little et al. (2001) in a British study found that partnership (a

sympathetic provider interested in the patient's concerns and expectations) and communication explained a high percentage of the variance (78%) in satisfaction in primary care. Froehlich and Welch (1996), in a study with 68 male veterans in a walk-in clinic, found that the perception of the provider's interpersonal behaviour was the sole significant predictor of satisfaction. Similarly, Cleary and McNeil (1988), in their review of early theoretical and empirical work on satisfaction, identified that empathy and caring were among the strongest predictors of satisfaction.

Satisfaction with information.

In this study, 80% of the participants indicated that they were satisfied with information. Twenty percent of the women in this study expressed dissatisfaction with information. Participants somewhat disagreed, disagreed, or strongly disagreed they were satisfied with items related to the explanations that the provider had given about what they could expect about parenting a newborn, followed by the way the provider had prepared them for labour and delivery, and with the explanation provided about medical procedures.

Information is an important aspect of prenatal care. Not only has the provision of information been included in practice guidelines (National Collaborating Centre for Women's and Children's Health, 2008), but the information has been found to be highly valued by women. Langer et al. (2002) found that although pregnant women in both arms of a randomized controlled trial reported satisfaction with information, pregnant women in the intervention arm (enhanced information and fewer visits) of the study reported greater satisfaction with information, particularly information related to labour

and delivery, breastfeeding, family planning and danger signs. Sword et al. (2012) found that pregnant women commented positively on the impact of receiving health promotion advice, such as gaining insight from completing a record of food intake. Women also identified that their provider's advice encouraged them to maintain a healthy lifestyle (Sword et al., 2012). Handler et al. (1998) found that the most important determinant of satisfaction with prenatal care was whether the provider explained procedures; this accounted for a third (32%) of the variance.

Perceived quality of prenatal care, patient-centered decision-making, and race/ethnicity accounted for 66% of the variance in satisfaction with information. This is the only dimension of satisfaction where interpersonal style was not a predictor of satisfaction. Patient-centered decision-making was a predictor of satisfaction with information. The regression coefficient (*b* weight) for perceived quality of prenatal care was 1.028, meaning that for each unit increase in perceived quality of care, a 1.028 unit increase in satisfaction with information is estimated ($p < .0001$).

Not only did 20% of the participants express dissatisfaction with information, but the participants also reported less perceived quality with the anticipatory guidance subscale of the QPCQ (Heaman, Sword, et al., 2012). This subscale was found to have the lowest mean score of all the subscales of the QPCQ. Within the anticipatory guidance subscale, there were several items where high percentages of participants reported they disagreed or strongly disagreed that they had received quality care. The items included: they were given adequate information about depression in pregnancy, they were given enough information to meet their needs about breastfeeding, their

prenatal care provider gave them options for their birth experience, their prenatal care provider spent time talking with them about their expectations for labour and delivery, they received adequate information about their diet during pregnancy, their prenatal care provider was interested in how their pregnancy was affecting their life, and their prenatal care provider prepared them for their birth experience.

These findings along with the findings related to satisfaction with information suggest that one-fifth of the participants were dissatisfied with information provided and substantial percentages (19%-33%) reported that they did not perceive that they had received quality anticipatory guidance with the items identified above. These findings suggest that important information is not always being provided in prenatal care, resulting in poor quality of care related to anticipatory guidance. The discussion below related to patient-centered decision-making as a predictor of satisfaction with information indicates that the type of information and how the information is provided are critical to satisfaction with information.

The regression coefficient (*b* weight) for patient-centered decision-making was 0.177, meaning that for each unit increase in the experience of patient-centered decision-making, a 0.177 unit increase in satisfaction with information is estimated ($p < .0001$). Consistent with Wensing, Elwyn, Edwards, Vingerhoets, and Grol's (2002) conceptual differentiation between communication and decision-making, patient-centered decision-making rather than communication or interpersonal style was a predictor of satisfaction with information in this study. Wensing et al. propose that shared decision-making is located within a "cognitive, rational paradigm" (p. 32) and is conceptually different from

communication and interpersonal style. As a result of their study in primary care on patient-centered communication and shared decision-making, Wensing et al. suggest that shared decision-making should not be considered the same as patient-centered communication, but that shared decision-making is closer to an evidence-based health care approach than may be the case with communication.

On average the participants in this study identified that they had only sometimes experienced patient-centered decision-making. The percentile scores indicate that 30% of the participants reported they had rarely or never experienced patient-centered decision-making. Examination of the item responses identified that 14% to 37% of the participants rarely or never had providers ask them if they were able to follow their advice, ask how they felt about the advice, ask if they were comfortable following the advice, or try to include them in decision-making. Interestingly, these findings are consistent with the literature. Wensing et al. (2002), for example, found that physicians were less consistent in their use of shared decision-making than they were in the use of patient-centered communication. Wensing et al. hypothesize that physicians bring patient-centered communication skills with them from their education, but they need to develop further competency in shared decision-making.

Wensing et al. (2002) identify that shared decision-making specifies a set of principles and competencies involving a detailed process of elucidating the nature of the problem, outlining a range of options that need to be considered, including associated benefits and harms, and determining if the patient has understood the factual data and that their views will influence the decision. Sword et al. (2012) found that participants

identified that when their providers provided very specific and detailed information, it made them feel more involved and confident, as well as feel that the provider actually cared and was paying attention to what was going on.

Wensing et al.'s (2002) principles are similar to those upon which decision aids are based. An example relevant to prenatal care is the use of decision aides to determine the method of delivery following a previous caesarean section. Compared to usual care, decision aides have been found to be more helpful to women who have had a previous caesarean section to decide on method of delivery. A randomized controlled trial with 742 pregnant women conducted by Montgomery et al. (2007) demonstrated that two interventions (information and decisional analysis) increased knowledge, decreased anxiety, and reduced decisional conflict as compared to usual care. Women in the decisional analysis group reported higher satisfaction than women in the information only and usual care groups. Nassar et al. (2007), in a randomized controlled trial of a decision aid for breech presentation and external cephalic version, also found that women who reviewed the decision aid experienced significantly lower decisional conflict, had increased knowledge, had no increase in anxiety, were more likely to feel that they had enough information to make a decision, and were more satisfied with decision-making.

The findings of this study illustrate the importance of the quality of information and patient-centered decision-making to satisfaction with information. Wensing et al's (2002) work provides an explanation for why patient-centred decision-making is a predictor for satisfaction with information and not communication and interpersonal

style. These findings and the literature related to patient-centered decision-making highlight the importance of providing information in a way that facilitates decisional analysis by pregnant women. Providing information, as Wensing et al. identify, is more than communication, but rather is an intervention that needs to be evidence-based.

Asian race/ethnicity was also found to be a statistically significant predictor of satisfaction with information. The regression coefficient (*b* weight) for race/ethnicity was 0.249, meaning that for Asian race/ethnicity a 0.249 unit increase in satisfaction with information is predicted ($p = .03$). This finding is not generally consistent with the literature. Weisman and Henderson (2001) found that Asian women in primary care reported poorer communication with their physicians than white, non-Hispanic women. Others have found Asians to be less satisfied than other race/ethnicity groups in ambulatory care settings (Murray-Garcia, Selby, Schmittdiel, Grumbach, & Quesenberry, 2000). Socio-economic characteristics, such as family income, occupational status, or education have been suggested as potentially explaining the observation of race/ethnicity differences in satisfaction (Weech-Maldonado, Morales, Spritzer, Elliot, & Hays, 2001). Ng and Newbold (2011), in their Canadian qualitative study on the provision of prenatal care to an immigrant population, suggest that pregnant women may have their own preconceived ideas of prenatal care that may reflect their previous experiences with the health care system in their countries of origin. Pregnant Asian women in this study may have had particular expectations that were exceeded, resulting in race/ethnicity (Asian) being a predictor of satisfaction with information.

Satisfaction with provider care.

The participants (95%) in this study identified that they were largely satisfied with provider care. Only 5% identified that they were not satisfied. The participants who were dissatisfied with provider care identified that they somewhat disagreed, disagreed or strongly disagreed that they were satisfied with not having to repeat their story every time they came for a visit, with the way they were made to feel that they were not wasting their provider's time, with the way their provider treated them, with the respect they were shown from their providers, with being able to ask questions without embarrassment, and with the quality of care provided.

Interpersonal style, perceived quality of care, and education accounted for 66% of the variance in satisfaction with provider care. The regression coefficient (*b* weight) for perceived quality of care was 0.693, meaning that for each unit increase in perceived quality of care, a 0.693 unit increase is estimated ($p = .< .001$). As described earlier, the technical competence of the provider was found to be important to the quality of care (Goberna-Tricas et al., 2011). Pregnant women in Sword et al.'s (2012) study identified the value of screening and assessment, particularly the tests and measurements, as part of quality prenatal care. Tests and measurements were seen as providing reassurance that the pregnancy and fetal development was progressing as it should.

The regression coefficient (*b* weight) for interpersonal style was 0.336, meaning that for each unit increase in the experience of a positive interpersonal style, a 0.336 unit increase in satisfaction with provider care is estimated ($p = .0002$). These findings are consistent with the literature. Ivanov and Flynn (1999), in their study with 397 low-risk

postpartum women in Russia, found that fewer negative experiences with health care providers was the strongest predictor of satisfaction with prenatal services.

Empirical findings have consistently demonstrated that patients who receive care from a physician with an "affiliation" (friendliness, agreeableness, caring, cooperative) type of interpersonal style, report that they are satisfied (Arguete & Roberts, 2000). Development of a therapeutic alliance is considered to be fundamental to patient-centered care rather than a useful addition. A therapeutic alliance emphasizes the importance of a patient's perception of relevance to the provider, a common understanding of goals, and a personal bond between the provider and the patient, with the provider being perceived as a sensitive and sympathetic (Bordin, 1979; Squier, 1990). There is also evidence to suggest that empathetic patient-centered interactions with health care providers not only improves patient satisfaction (Haslam, 2007; Kim et al., 2004; Kinnersley et al, 1999; Norfolk et al., 2007; Zachariae et al., 2003), but also enablement (Mercer et al., 2002), and they may improve health outcomes (Price et al., 2006; Bikker et al., 2005; Neumann et al., 2007).

The findings in this study are consistent with the findings of Handler et al. (1998) and Omar and Schiffman (1995), where women were found to be more satisfied when they were engaged with their providers. Laslett et al. (1997) found that women who felt their worries were not taken seriously were less satisfied. Handler et al. (1996) and Sword et al. (2012) also found that women identified that they expected respect, treatment as individuals, and understanding of their personal circumstances in prenatal care. Alkazaleh et al. (2004), in a Canadian study that surveyed 76 women who

experienced a sonographically detected pregnancy complication, noted that the perceived empathy of the provider was tremendously important to the women. Sword et al. also found that women identified trust and empathy as important to the quality of care.

The regression coefficient (*b* weight) for education was 0.019, meaning that for each unit increase in education, a 0.019 unit increase in satisfaction with provider care is estimated ($p = .023$). Although education independently contributes only 0.019 of a unit increase, the confidence interval was very small, indicating the finding is very precise. Education remains equivocal in the literature in terms of its influence on satisfaction (Sitzia & Wood, 1997). Although most research on satisfaction with prenatal care has found higher levels of education to be associated with satisfaction (Hildingsson & Radestad, 2005; Erci & Ivanov, 2004; Laslett et al., 1997), others (Ivanov, 2000) have found lower levels of education to be associated with satisfaction. There is insufficient knowledge to determine how education influences satisfaction with provider care. As others have suggested, other factors may be confounding the findings (Sitzia &Wood, 1997). It was noted in Ivanov's (2000) study that incentives including a financial incentive to attend prenatal care early in their pregnancies, decreased workloads with employment at 18-20 weeks of gestation, and maternity leave at 30 weeks of gestation with full pay may have influenced Ivanov's findings.

Attention to the caring processes in the relationship between pregnant women and their provider is critical to maintain the high level of satisfaction with provider care. The findings in this study support Donabedian's (2003) assertion that personal concern, empathy, respectfulness, avoidance of condescension, willingness to take time, honesty,

and, in Donabedian's (2003) words, "plain good manners" are essential to good care. Donabedian (2003) identifies that the patient-provider interaction is at the core of quality (Figure 1). Provider care is an important process aspect of prenatal care. Donabedian (2003) defines process as relating to the activities that a provider carries out, and identifies that it is focused on interpersonal relationships.

Satisfaction with staff interest.

Eighty per cent of the participants indicated that they were satisfied with staff interest. The 20% of the participants who were dissatisfied with staff interest identified that they were dissatisfied with the time staff spent talking about things that were of interest to them, the way staff expressed concern about their overall personal situation, and the interest and concern the staff had shown them. As was identified earlier, satisfaction with staff interest is particularly important to women receiving prenatal care. Raube et al. (1998), in their testing of the Prenatal Care Satisfaction Scale. identified that their factor analysis suggested different dimensions of satisfaction than those identified in the literature on general medical care (Hall & Dornan, 1988; Ware et al., 1983). In addition to the dimension related to provider interactions, a dimension related to staff interactions was identified, suggesting that this additional dimension might be particularly important to prenatal care. The satisfaction factor of the PESPC appropriately includes satisfaction with staff interest as a subscale. It hypothesized that the importance of this subscale to prenatal care may be related to the likelihood of involvement of staff, other than the provider, in the care of pregnant women, which may be different than in other general types of health care.

Interpersonal style and perceived quality of care were also found to be significant process predictors of satisfaction with staff interest; annual family income of $40,000 - $79,999 was found to be a significant predictor of lower satisfaction with staff interest. The model accounted for 55% of the variance in satisfaction with staff interest. The regression coefficient (*b* weight) for perceived quality of care was 0.949, meaning that for each unit increase in perceived quality of care, a 0.949 unit increase in satisfaction with staff interest is estimated ($p < .0001$). The regression coefficient (*b* weight) for interpersonal style was 0.267, meaning that for each unit increase in the experience of a positive interpersonal style, a 0.267 unit increase in satisfaction with staff interest is estimated ($p = .039$). These findings are consistent with the findings regarding process aspects of care in the literature. Handler et al. (1996), in their focus group study on women's satisfaction with prenatal care settings, found that women reported they wanted the staff to show them consideration. Sword et al. (2012) found that women identified that characteristics such as the temperament and personality of the staff contributed to the perceived quality. Staff who were pleasant and greeted women they attended had a positive impact on how women perceived their care (Sword et al., 2012) These findings suggest that interpersonal style and perceived quality of care are not only related to the interactions and care received from the provider, but also to the interactions with others, such as the reception staff, the personnel in the laboratory taking specimens, and likely the professional nursing and social work staff, among others.

The regression coefficient (*b* weight) for income ($40,000-$79,999) was -0.277, meaning that with medium income results in a 0.277 unit decrease in satisfaction with

staff interest is estimated (p = .017). This finding is inconsistent with the literature. It is unclear why only middle income was a predictor of satisfaction with staff interest. Erci and Ivanov (2004), however, found a positive relationship between monthly income and satisfaction with the courtesy of the personnel and the coordination of the service. Zadoroznyj (1996) on the other hand, found no relationship between income and the extent to which staff were perceived as caring and considerate. The relationship of income with satisfaction with staff interest remains equivocal.

Satisfaction with system characteristics.

The satisfaction with system characteristics subscale measures satisfaction with the following aspects of the system: wait time to see the provider; the total amount of time at the clinic; parking; waiting room and exam room facilities; ability to schedule convenient appointments; the ease with which appointments are rescheduled; how easy it was to get early prenatal care; having all the recommended tests; and the number of prenatal visits. As Donabedian (2003) describes, attributes of structure are more easily observed and documented, and they are more stable than attributes of process and outcome. Donabedian (2003) identifies these features as adjuncts to interpersonal processes, and, like interpersonal processes, help to make the experience of receiving care pleasant or rewarding.

Eighty percent of the participants reported satisfaction with system characteristics. As with satisfaction with information, less satisfaction was reported with system characteristics than with other subscales of satisfaction. The participants that reported dissatisfaction with system characteristics expressed dissatisfaction with

parking facilities, with the amount of time they had to wait to be seen by their provider, with the total amount of time they spent at the office/clinic, with how easy it was to get prenatal care early in their pregnancy, with being able to schedule a prenatal visit at a convenient time, and with how easy it was to reschedule their prenatal visits. Participants also expressed dissatisfaction with the waiting room facilities of the office/clinic and with the examination rooms.

Four variables were significant predictors of satisfaction with system characteristics: interpersonal style, perceived quality of prenatal care, perceived stress, and the type of prenatal care provider (midwife). The four variables accounted for 56% of the variance in satisfaction with system characteristics. This is the only dimension of satisfaction where perceived stress and the type of prenatal care provider were predictors. The regression coefficient (*b* weight) for perceived quality of prenatal care was .771, meaning that for each unit increase in perceived quality of care, a .771 unit increase in satisfaction with system characteristics is estimated ($p < .0001$). The regression coefficient (*b* weight) for interpersonal style was 0.305, meaning that for each unit increase in the experience of interpersonal style, a 0.305 unit increase in satisfaction with system characteristics is estimated ($p = .014$).

The findings in this study are consistent with the literature. Sword et al. (2012) quoted a woman in their study who identified the cost of parking for prenatal care was over $60.00 per month. As Sword et al. noted free or low-cost parking is important to improve access to prenatal care. In this study, approximately one-third (34%) of the participants received prenatal care in an ambulatory care facility of one of the two large

tertiary facilities. Parking at the tertiary care hospitals is available in a complex array of parking lots spread over large campuses. Not only is finding a parking space challenging, parking fees are expensive and navigating your way to the location of the prenatal visit may also be difficult. Some private obstetrician and family physician offices offer similar challenges by virtue of their locations adjacent to the hospitals or in the downtown areas.

The dissatisfaction with the amount of time participants waited to be seen by their provider is consistent with the literature. Longer wait times for a visit have been found to be associated with decreased satisfaction with prenatal care in several studies (Erci & Ivanov, 2004; Handler et al., 1996; Handler et al., 1998; Handler et al., 2003; Laslett et al., 1997; Zadoroznj, 1996). Handler et al. (1996) reported that women in their focus groups identified that they were angry if they had to wait a long time, particularly when the physician would only spend five minutes in the actual visit. Laslett et al. (1997) found that women who often waited more than thirty minutes for their visit were less satisfied.

Anderson, Camacho, et al. (2007) examined the relationship between wait time and patient satisfaction in primary care, and found that longer wait times were associated with lower patient satisfaction but that the decrease in patient satisfaction associated with longer wait times was substantially reduced by the increased time spent with the physician. Anderson, Camacho, et al. found that the most powerful predictor of patient satisfaction in their study was the time spent with the physician, explaining 28% of the variance. Likewise, Bikker and Thompson (2006) found that time was a predictor of

satisfaction. The issue of time is interesting. The finding that quality of care was a predictor of satisfaction with system characteristics and the literature related to the time indicate that the focus on improving satisfaction with system characteristics cannot be at the expense of quality as perceived by pregnant women. For example, decreasing wait time cannot be accomplished by spending less time with individual women in the actual visit with the provider. Attention to scheduling might be more important. The items identified above are likely important components of quality care that if improved may result in increased satisfaction with prenatal care.

Scheduling prenatal care is complex due to the need to schedule successive visits with increasing frequency over a course of care. Hospital ambulatory care departments and some private physician' offices have either no electronic scheduling system or outdated systems that do not meet the scheduling needs for prenatal care. Historically there have been barriers to scheduling prenatal care early in a pregnancy. Some sites have used outdated scheduling practices, such as requiring pregnancy confirmation by a health care provider and/or waiting until the woman is 12 weeks of gestation, before scheduling an appointment. In addition, there are few opportunities for evening or weekend prenatal visits, likely making prenatal care inconvenient, particularly for women who are employed in either 9-5 types occupation or for women who work in jobs where it is difficult to take time away from work. For some women, attending a prenatal visit may require having to take unpaid time away from work. The lack of "after-hours" access may be a hardship for the "working poor.

The regression coefficient (*b* weight) for the type of prenatal care provider (midwife) was 0.359, meaning that for participants receiving care from a midwife, a 0.359 unit increase in satisfaction with system characteristics is estimated ($p = .004$). This finding that receiving prenatal care from a midwife independently predicts just over one-third of a unit increase in satisfaction with system characteristics is not surprising given the differences in the system characteristics between the clinics where midwifery services are offered and where physician services are offered.

The vast majority of midwifery services are provided in community-based Access Centres and community health centres (including a birth centre). The Access Centres and community health centres may well be different from physicians' offices and ambulatory care departments in terms of the structural aspects of care. Parking is almost always provided in a lot adjacent to the location and free of charge. As mentioned, these centres are community-based and likely to be located close to where the pregnant women live. The Access Centres and the Birth Centre in Winnipeg all have relatively new infrastructure with appealing, comfortable, welcoming, and spacious areas. Physician practices and the ambulatory care areas of the hospitals, on the other hand, have aging infrastructure and often small, crowded spaces. Sword et al. (2012) found that pregnant women often described physicians' or obstetricians' offices as "medical" and "clinical" whereas women described the midwives' facilities as "comfortable" and not feeling "clinical." Women described the midwives' facilities as having a chair rather than an examining table, and a separate room for pelvic examinations. The Access Centres and community health centres in Winnipeg tend to

have more counselling types of spaces and fewer examination rooms. The physician's offices and ambulatory care areas in the hospitals tend to have mostly examination rooms and few other types of spaces. Appointment scheduling systems in Access Centres and community health centres where midwives practice tend to be electronic and are also likely to be more flexible than busy physician practices and to facilitate convenient visit times and early access to prenatal care.

The findings are consistent with the literature. Erci and Ivanov (2004) also found a statistically significant association between the setting where prenatal care was provided (primary health care centres) and women's satisfaction with convenience. Zadoroznyj (1996) found that women who received prenatal care from midwives reported fewer problems with wait times and were more likely to feel that their provider had spent sufficient time with them than women who received prenatal care from a physician. Qualitative data from the same study identified that women who used the midwifery prenatal clinics reported more flexibility with appointments (Zadorznyj, 1996). The findings of this study indicate that the system characteristics of the sites where midwives practice are associated with greater satisfaction.

The regression coefficient (*b* weight) for perceived stress was 0.221, meaning that for each unit increase in perceived stress, a 0.221 unit increase in satisfaction with system characteristics is estimated ($p = .040$). This is an interesting finding given that Tough et al. (2004) found that women with poor emotional health were less likely to be satisfied with prenatal care. Emotional distress is commonly observed in women of childbearing age and is considered to be one of the most common causes of pregnancy-

related maternal morbidity (Priest, Austin, Barnett, & Bruist, 2008). Under-recognition of emotional symptoms has been reported in the literature as being associated with decreased satisfaction with care (Coker, Bethea, Smith, Fadden, & Brandt, 2002). It may well be that emotional distress was being recognized and attended to by prenatal care providers in this study. The findings in this study support Donabedian's (2003) proposition that structural aspects of care, such as a properly functioning appointment system and pleasant, comfortable surroundings, are associated with satisfaction as an outcome.

Expectations and satisfaction.

On average, participants somewhat agreed that they had expectations for complete care, for provider continuity, for personalized care, and to receive other services such as those available from a nutritionist, public health nurse, or social worker. Contrary to most of the literature, expectations were not found to be related to overall satisfaction or any of the satisfaction subscales, with the exception of a significant small negative relationship found between expectations and satisfaction with system characteristics.

Linder-Pelz (1982a), in her early work on expectations, found that expectations were the most important social psychological determinant of satisfaction. Expectations consistently explained most of the variance in general satisfaction and particularly satisfaction with physician behaviour and satisfaction with convenience (Linder-Pelz, 1982a). In most satisfaction studies on various types of medical care, expectations have been found to be related to satisfaction (Anderson, Weisman, et al., 2007; Hsieh &

Kagle, 1991; Joos, Hickman, & Borders, 1993; Korsch et al., 1968; Kravitz, Callahan, Azari, Antonius, & Lewis, 1997; Kravitz, Cope, Bhrany, & Leake, 1994; Jackson, Chamberlin, & Kroenke, 2001; Larsen & Rootman, 1976; Like & Zyzanski, 1987; Linder-Pelz, 1982b; Linder-Pelz & Streuning, 1986; Williams, Weinman, Dale, & Newman, 1995). Other studies (Bowling et al., 2012; Froehlich & Welch, 1996; Peck et al., 2001), however have found that expectations were unrelated to satisfaction. Bowling et al. (2012) in their review of the literature, found that pre-visit ideal and realistic expectations (those expectations that were determined to be likely met) were not associated with satisfaction, but that post-visit expectations (expectations met) were a predictor of satisfaction.

Dahl, Kesmodel, Hvidman, and Olesen (2006), in a review of the literature, found that pregnant women's satisfaction with information on serum screening in the Netherlands was related to expectations. Michie, Marteau, and Bobrow (1997) also found in their study of 131 genetic consultations in the United Kingdom that when expectations for information were met during genetic counselling, expectations were associated with satisfaction with the information given. It is important to note that the studies on expectations and satisfaction used varying definitions of expectations, theoretical perspectives, and methods.

Linder-Pelz (1982a) found support for a general discrepancy model which predicts that the greater the discrepancy between perceived occurrences and prior expectations, the less the satisfaction. Expectation discrepancy was not measured in this study and may be the reason for not observing a relationship between expectations and

satisfaction other than with system characteristics. The lack of an observed relationship between expectations and satisfaction in this study may also be related to the measurement of expectations during the latter part of a course of prenatal care and not prior to the first prenatal visit. The cross-sectional nature of both Linder-Pelz (1982b) and this study limit the generalizability of the results. Kravitz (1996) identifies that although general and visit specific expectations are usually harmonious, they are not always. Thompson and Sunol (1995), in their assimilation-contrast model of satisfaction, propose that prior expectations undergo modification as the encounter or course of care occurs. When perceptions of attribute performance are only slightly different from experience, there is a tendency to interpret experience more congruently with expectations (assimilation effect). Few studies have incorporated longitudinal designs. As prenatal care is provided over a period of approximately eight to nine months, participants may have modified their expectations over time. Expectations may also be conditioned by health care providers (Waldenstrom, 1998; Peck et al., 2001). Peck et al. (2001) hypothesize that physicians may respond to a patient's expectations in a manner that leaves the patient satisfied with the encounter even though expectations may not have been met. In this study a negative relationship was found between expectations and system characteristics. This finding may be related to the fact that system characteristics remain stagnant and are not usually changed in response to a patient's expectations.

Further analyses of the data in this study found a significant negative correlation between expectations and satisfaction with the waiting facilities of the office/clinic, with how easy it was to get prenatal care early in pregnancy, and with the number of prenatal

visits made during the first 6 to 7 months. As identified earlier, the small, crowded waiting areas in sites with aging infrastructure may not have been what the participants expected. Sword et al. (2012) found the aesthetics of the space were important.

The concept of expectations is complex, dynamic and multidimensional (Bowling et al. 2012). There continues to be little consensus about the conceptualization and measurement of expectations. New instruments to measure expectations are needed to disentangle the various definitions or types of expectations (ideal, predicted, normative, and unformed [Thompson & Sunol, 1995]), to identify influences on expectations, and to capture expectations related to structure, process, and outcome.

Gottlieb et al. (2004) identify that quality is considered to be an "attitude" like the concept of satisfaction, and they suggest that "perceived quality" is formed through a process similar to satisfaction based on expectancy-value theory. Anderson, Weisman, et al. (2007) in a study on women's satisfaction with their primary health care services (including prenatal care), found a relationship between expectation discrepancy scores and overall ratings of quality. Anderson, Weisman, et al. (2007) also found a relationship between expectation discrepancy scores and perception of provider interpersonal behaviour. Gottlieb et al.'s suggestion that perceived quality is formed through a process based on expectancy-value theory likely explains Anderson, Weisman, et al.'s findings that expectations are related to perceived quality (Gottlieb et al., 1994). The impact of expectations on quality was not measured in this study.

Assessing expectations, perceived quality, and satisfaction over a course of prenatal care may increase our understanding of the relationship between these variables.

Understanding patients' expectations may be important in considering how to improve satisfaction with prenatal care.

Type of prenatal care provider.

There were significant findings related to the association between the type of prenatal care provider and perceived quality of prenatal care, interpersonal processes of care, and satisfaction. The type of prenatal care provider is considered a structural aspect of care according to Donabedian (2003) as depicted in Figure 1. The type of prenatal care provider was found to relate to structure, process, and outcome.

Participants receiving care from a midwife perceived that they had received significantly greater quality of care as compared to those participants that received care from a physician. Participants receiving care from a midwife also reported significantly more frequent experiences of interpersonal processes of care (communication, patient-centered decision-making, and interpersonal style) than those participants receiving care from an obstetrician. The same observations were made between those receiving care from a midwife and those receiving care from a family physician, with the exception of experiences with patient-centered decision-making, where no significant differences were observed between participants receiving prenatal care from a midwife and those receiving care from a family physician. The similarities in the philosophies of care between midwives and family physicians, particularly in terms of patient-centered approaches may account for these differences (College of Family Physicians of Canada, 2012; College of Midwives of Manitoba, 2012).

There were statistically significant differences between the participants receiving care from the various types of providers at the $p \leq .001$ level in overall satisfaction scores and in all of the satisfaction subscale scores. The participants who received prenatal care from a midwife were significantly more satisfied overall than participants receiving care from a physician, as well as with each of the satisfaction subscales, with the exception of satisfaction with information, where no differences were observed between the participants receiving prenatal care from a midwife and those receiving prenatal care from a family physician.

The findings in this study are consistent with the literature. Handler et al. (1998), for example, found that pregnant women experienced significantly higher satisfaction with midwives and nurse practitioners. Harvey et al. (2002) measured satisfaction with 194 low-risk women at 36 weeks of gestation randomly assigned to midwifery care and physician care; women assigned to physician care expressed less satisfaction. It is important to note that women assigned to physician care may not have been able to access midwifery care and may have expressed less satisfaction. Waldenstrom, Brown, McLachlan, Forster, and Brennecke (2000), in an Australian study comparing women's satisfaction with prenatal care randomly assigned to team midwifery care (n = 495) and standard care that was largely physician attended (n = 505) also found that women in the team midwifery care were more satisfied than the women in the standard care group. The odds of the women in the team midwifery group more likely agreeing that overall their care during pregnancy was good, was more than twice that of the women in standard care (Waldenstrom et al., 2000). De Koninck et al. (2001) used mixed methods to

evaluate women's assessment of maternity care a couple of months after birth. The evaluation was conducted in Quebec, with 867 women who received midwifery care and 760 women who received physician care. Both the women in the midwifery group and the women in the physician group identified that they had opportunities to ask questions and discuss information during their prenatal visits. Women in the midwifery group had significantly more opportunities than the women in the physician groups ($p < 0.001$). When asked if the provider raised issues that the women were concerned about but did not know how to bring up, significantly more women in the midwifery group concurred with that statement than women in the physician group ($p < 0.001$). Waldenstrom et al. also identified that the pregnant women in team midwifery care felt better informed and noted that providers explained information provided. The observation of no difference in terms of satisfaction with information between participants receiving care from a midwife and those from a family physician in this study may be due to their similar patient-centered approach to care (College of Family Physicians of Canada, 2012) or the women's long-standing relationship with their family physician.

The participants who received prenatal care from a midwife were significantly more satisfied with provider care than participants receiving care from a physician in this study. DeKonnick et al. (2001) identified that their data indicate midwives seemed to provide more woman-centered and personalized care. Midwives espouse a philosophy of care (College of Midwives of Manitoba, 1995) that includes understanding that pregnancy, labour, and birth are profound experiences for women and their families, and that takes into account the meaning of these experiences for the woman and her family.

Attention to women's meanings and values regarding pregnancy and birth may be why women express greater satisfaction with midwifery care.

The vast majority of midwives in Manitoba are salaried and employees of the regional health authorities (Heaman, Kingston, et al., 2012), whereas most obstetricians and physicians are remunerated on a fee-for-service basis. The salaried remuneration model and smaller caseloads allow midwives to spend more time with their clients in prenatal visits and may be a plausible explanation for the differences observed. Parry (2012) identified that midwives were more involved in women's care and visits were 45 minutes to one hour long, whereas with a physician "you're in and out." Midwives were identified as taking the time to listen to concerns and making women feel like a person rather than just a pregnancy (Parry). Women in Sword et al.'s (2012) study were also found to report a difference in the amount of time that midwives spent with them as compared to physicians, and women identified that longer time spent with the midwife as a reason for preferring midwifery care. De Koninck et al. (2001) noted that women in midwifery care on average had a first visit that lasted 78 minutes as compared to the women in the physician group where the first visit lasted 33 minutes on average. Subsequent visits for women in the midwifery model were averaged 66 minutes as compared to subsequent visits in the physician group lasting on average 19 minutes.

De Koninck et al. (2001) suggested that women who prefer midwifery care may differ somewhat from women who prefer physicians. Examination of the personal and pregnancy characteristics of the participants in this study who received care from a midwife were not found to be significantly different from the characteristics of those

participants who received care from a physician. Midwives in Manitoba are responsible for directing a portion (50%) of their services to priority populations (women currently not receiving adequate perinatal health care and socio-economically disadvantaged women) (WRHA, 2011b). Given this responsibility, differences in personal characteristics should have been observed. Consistent with the findings in this study, a recent report from the Manitoba Centre of Health Policy (Heaman, Kingston, et al., 2012) indicates that the target populations may not be receiving midwifery services to the extent expected. Community areas in Winnipeg with residents of higher socioeconomic status had higher rates of midwifery care as compared to core area communities with residents of lower socioeconomic status (Heaman, Kingston, et al., 2012). These observations may be due to the limited accessibility to midwifery in Manitoba. The few funded positions in Winnipeg limit the ability of midwives to do outreach and seek out pregnant women in their target populations.

It is clear from the findings of this study with regard to the type of prenatal care provider that women who receive care from a midwife perceive a greater quality of care, experience interpersonal processes of care more frequently, and are more satisfied with prenatal care than women who receive prenatal care from a physician. Consistent with Donabedian's (2003) framework, the type of prenatal provider was found to influence the perceived quality of prenatal care and interpersonal processes of care. As can be seen from the discussion, structure (type of provider) and processes (quality and interpersonal processes) influenced satisfaction.

Strengths and Limitations of the Study

Strengths of the study.

The finding that most women in this study were satisfied with prenatal care is consistent with the findings in the literature. Although most of the participants in this study were satisfied with prenatal care, 5-20% reported dissatisfaction with various dimensions. Participants were least satisfied with information and systems characteristics. Examination of satisfaction as a multidimensional concept permitted the analysis of several dimensions and provided valuable information on how prenatal care can be improved.

This study is one of the few studies to examine the factors related to women's satisfaction with prenatal care in Canada, and more specifically in Winnipeg. The quantitative methodology used in this study enabled the surveying of a large number of women receiving care by various providers and in various settings. The characteristics of this sample were deemed sufficiently similar to those of Winnipeg to make the findings generalizable to the population in Winnipeg. The surveying of pregnant women before birth effectively removed the potential bias of the birth of a healthy baby on satisfaction. Questionnaires were also self-administered, which is important in satisfaction studies as they are anonymous and tend to result in less socially desirable responses (Fitzpatrick, 1991).

This was the first study in Canada to use not only valid and reliable instruments, but instruments designed specifically for use with prenatal care. The use of instruments specific to prenatal care was important given that the dimensions of satisfaction with

prenatal care are different from the dimensions of satisfaction for other forms of health care (Omar et al., 2001; Raube et al., 1998). The PESPC (Omar et al., 2001) includes subscales on satisfaction with staff interest and with provider care, which have been demonstrated to be important to prenatal care (Raube et al., 1998). This was the first study to examine the relationship between quality of care and satisfaction using the QPCQ (Heaman, Sword, et al., 2012), an instrument specifically designed to measure the quality of prenatal care.

The use of both the QPCQ (Heaman, Sword, et al., 2012) and the dimensions of the PIPC (Wong et al., 2004) permitted the examination of women's experiences with prenatal care and their relationship to satisfaction. The measurement of women's experiences with prenatal care and the examination of participants' responses to the items provided valuable information that can assist to improve prenatal care.

Few studies on satisfaction with prenatal care have examined the relationship between expectations and satisfaction in prenatal care. The expectations factor of the PESPC (Omar et al., 2001) facilitated the examination of the relationship of expectations with satisfaction. Contrary to the literature on satisfaction with general health care, the analysis demonstrated that expectations were not found to be related to satisfaction with prenatal care. Further study is required to determine the reasons for the lack of an observed relationship.

The findings in this study provide support for the hypothesized relationships between structure, process, and outcome (satisfaction) with prenatal care as proposed by Donabedian (2003). In addition, this study provides support for perceived quality of

prenatal care as an independent variable that predicts satisfaction as proposed by Gottlieb et al. (1994).

Limitations of the study.

High levels of satisfaction were reported in this study, consistent with other studies in the literature. It is, however, possible that women who were dissatisfied with prenatal care either did not participate or were not available for selection into the study. The perspectives of women who were not able to speak English were also not able to be captured in this study. Future studies should include these perspectives. Participants receiving care from a midwife were also over-represented in this study. These limitations may have contributed to the high satisfaction levels observed in this study.

The sample size was estimated to have an 80% power to detect a moderate effect at the 0.05 level of significance; it was determined to be adequate to detect significant relationships in the regression analyses. However, the sample size had limited statistical power to detect differences between groups, particularly with the nominal level variables, such as race/ethnicity due to insufficient cell sizes for some categories. Since the sample was a non-representative convenience sample, the results cannot be generalized beyond the local context. There was an over-representation of Aboriginal women and visible minorities in the sample, as well as the mentioned over-representation of participants receiving care from a midwife.

The instruments in this study were self-administered; this is an important approach to conducting satisfaction studies to facilitate obtaining true evaluations of satisfaction and prevent obtaining only socially acceptable responses (Fitzpatrick, 1991).

As a result of using self-administered questionnaires, not all questions were completed by all participants, resulting in missing data. Although the missing data were tested for patterns, with the results supporting an inference that the missing data were likely MAR, there may have remained possible threats to internal validity, resulting in Type I errors (Polit, 2010). The statistical power in the study remained sufficient to conduct the regression analyses. The interpersonal style dimension of the PIPC had 27% of the data missing; results related to the interpersonal style variable should be interpreted cautiously. Given that steps were taken to minimize the effect of missing data in this study and that the results were similar to those obtained in the literature, it is unlikely that the results were seriously affected by the missing data.

The impact of satisfaction on utilization, adherence to health recommendations, and maternal and newborn health outcomes was not assessed. The testing of Donabedian's (2003) framework was limited to examining structure, process, and one outcome (satisfaction). Health outcomes were not tested. Future research is required to further examine health outcomes.

Recommendations for Research

The finding that expectations for prenatal care were unrelated to satisfaction was surprising given the literature. Expectations discrepancy was not measured in this study and expectations were measured retrospectively towards the end of a course of prenatal care. A prospective longitudinal study is needed to determine the relationship between expectations, quality of care and satisfaction. Expectations for prenatal care ideally should be measured prior to the first prenatal visit. It is also important to determine if

expectations change over a course of prenatal care. A qualitative component may contribute further information on the types of expectations pregnant women may have and whether assimilation around a "zone of tolerance," as described by Thompson and Sunol (1995) occurs over a course of prenatal care. Discrepancy between expectations and experience should also be examined. Further exploration of how providers ascertain and negotiate expectations in a health encounter may also provide valuable information (Peck et al., 2001). Conducting a longitudinal study over several courses of prenatal care may also inform how expectations are developed.

Future research with larger sample sizes could examine additional variables, such as the subscales of the QPCQ (Heaman, Sword, et al., 2012) and the subscales of interpersonal style dimension of the PIPC (Wong et al., 2004). Examination of these subscales may assist in more fully understanding the components of quality and interpersonal style that are important to satisfaction. In addition, research should make an effort to further understand the factors associated with dissatisfaction.

It is important to continue to include socio-demographic variables in studies on satisfaction as they enable researchers to learn more about the determinants of satisfaction that may reveal important considerations in the delivery of prenatal care to improve satisfaction with prenatal care (Johnson, Greaves, Repta, et al., 2009). Qualitative research may also provide a more in-depth understanding of how socio-demographic variables such as education may affect satisfaction.

Recommendations for Practice

Participants in this study were overall satisfied with prenatal care. However, 5% to 20% were not satisfied. Analysis of the items in each of the subscales identified the specific areas where participants were dissatisfied, which could provide direction for practice improvement.

Examination of the areas of dissatisfaction, the areas where participants perceived less quality of care, and the areas where participants did not experience interpersonal processes of care offers opportunities for structure and process improvement in the delivery of prenatal care to improve women's satisfaction. Of the participants who expressed dissatisfaction with the structural aspects of care almost one-quarter (24.1%) expressed dissatisfaction with the amount of time they had to wait to see their provider, and 22.7% expressed dissatisfaction with the total amount of time they spent at the office/clinic. Improvements need to be made in how prenatal appointments are scheduled. Electronic scheduling systems are needed that can adjust for longer initial appointments and for the more frequent appointments required as gestation increases. Rapid access systems may increase access to prenatal care early in pregnancy. In addition, systems are required to ensure that clinics do not become overbooked, particularly when a provider cancels a clinic and rebooks prenatal appointments.

The wait time to see a provider may provide an opportunity to address process issues that have led to dissatisfaction. Women were dissatisfied with the information provided, in particular, regarding explanations about medical procedures, what they could expect about parenting a newborn, and the ways they were prepared for labour and

delivery. Participants who rated the quality of prenatal poorly also rated the quality of information related to depression, breastfeeding, diet, and preparation for the birth experience, as well as discussion about expectations and options for birth experience as low. It is important that information provided to pregnant women be enhanced. Creative ways of providing that information need to be explored. The wait time to see the provider could potentially be used to provide information.

Women expressed dissatisfaction with the amount of time staff spent talking about things that were of interest to them, and they were dissatisfied with the interest and concern that the staff had shown them. Involving staff more fully in the education aspects of prenatal care may improve satisfaction with staff interest. Other areas for improvement include improved documentation and ideally the implementation of an electronic health record. Participants in this study expressed dissatisfaction with having to repeat their story every time they came for a visit.

The identification of patient-centered decision-making and perceived quality of care as predictors of satisfaction with information provides guidance for practice. The findings of this study, as well as information from other studies in the literature, offer evidence to help guide improvements to prenatal care. Wensing et al. (2002) specify a set of principles and competencies for shared decision-making. These principles should be used when presenting information about lifestyle choices in pregnancy. It is important to present information in such a manner that facilitates shared decision-making, as the findings in this study demonstrated that 30% of the participants had rarely or never experienced patient-centered decision-making.

Recommendations for Education

Evidence-based methods of providing patient education, including the importance of decisional analysis strategies and patient-centered decision-making, need to be incorporated into both formative and continuing education programs for all prenatal care providers and staff (including nurses, social workers, and others). It is also critical that ongoing professional development include not only the latest evidence on the type of information to impart to pregnant women, but also the strategies to ensure that pregnant women receive the information in a manner they can use it and in a way that creates a partnership and shared decision-making approach.

Clerical staff and other support staff have an important role in promoting satisfaction with staff interest. It is therefore important that clerical and other support staff be provided with professional development opportunities related to interpersonal processes of care.

Recommendations for Policy

Given the findings of this study, more attention needs to be given to the development of care delivery models that support quality prenatal care, interpersonal processes of care, and patient-centered decision-making to improve women's satisfaction. Physician remuneration models, for example, create disincentives to quality care. The scheduling and workload pressures result in women spending more time in the waiting room and physicians having less time with pregnant women in their prenatal visits. Both of these issues have been identified in this study and in the literature as creating greater dissatisfaction with prenatal care among women receiving care from a

physician as compared to women who receive care from a midwife (DeKoninck et al., 2001; Parry, 2012; Sword et al., 2012). Alternative remuneration models should be considered.

Consideration should be given to developing more community-based sites for the delivery of prenatal care. The results of this study indicate that having a midwife as a provider of prenatal care is a predictor of satisfaction with system characteristics. Effort should be put into learning more about the system characteristics that are found to be more satisfactory in midwifery care so they can be emulated as much as possible in other settings. As identified earlier, information technology is one system characteristic that could be improved. The lack of information technology to support an electronic prenatal record and efficient and flexible scheduling may be contributing to the dissatisfaction observed with system characteristics.

As the participants who received care from a midwife identified that they perceived greater quality of prenatal care, experienced interpersonal processes of care more frequently, and were more satisfied, there are important policy recommendations that need to be made regarding midwifery. It is important that midwifery education become sustainable in Manitoba in order to ensure an ongoing supply of midwives. Although a midwifery education program has existed through the University College of the North for approximately six years, there have not been any graduates due to various issues such as the lack of midwives to supervise students (Kusch, 2012). A sustainable education program will not only ensure that the midwifery care remains available, but

also that midwifery practice continues to grow and become available to a larger number of women in Manitoba.

Although the Midwifery Act was passed in 1997 and proclaimed in 2000, midwifery has not grown according to the projections made by the Human Resource Strategy for Midwifery Implementation. As in other provinces, the demand for midwifery services is fast outstripping the supply of midwives. This is particularly true in Winnipeg, where women are being turned away because of overflowing case-loads (Haworth-Brockman, 2002). It is recommended that the Province of Manitoba ensure a sustainable midwifery education program and fund additional midwifery positions to ensure an ongoing supply of midwives and promote the growth of midwifery in Manitoba.

Conclusion

This study identified the most significant factors related to pregnant women's satisfaction with prenatal care in Winnipeg, thereby providing valuable information that can now be incorporated into existing programming. The perceived quality of prenatal care, interpersonal style, patient-centered decision-making, and the structural characteristics of prenatal care provided in the sites where midwives practice predicted satisfaction. The findings of this study provide empirical support to the hypothesized associations between structural and process aspects of prenatal care and satisfaction in Donabedian's (2003) framework. In addition, the findings of this study are consistent with the literature, demonstrating that satisfaction is a multidimensional concept and that examination of the dimensions of satisfaction can provide valuable actionable

information to improve prenatal care. The implications for future research, practice, education, and policy have been identified.

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Appendix A

PATIENT EXPECTATIONS AND SATISFACTION WITH PRENATAL CARE

The following items ask about your expectations and satisfaction with the care you received from your health care provider during this pregnancy. Please rate each item on a scale of 1 to 6, where 1 is strongly disagree and 6 is strongly agree.

EXPECTATIONS	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
COMPLETE CARE - *I expected:*						
1. to be seen sooner for my first prenatal visit	1	2	3	4	5	6
2. to have my prenatal visits take a long time	1	2	3	4	5	6
3. to get more from my prenatal visits than being weighed and having my baby's heart checked	1	2	3	4	5	6
4. to receive information during my visits without having to ask so many questions	1	2	3	4	5	6
PROVIDER CONTINUITY - *I expected:*						
5. to have one provider that I routinely see for my prenatal visits	1	2	3	4	5	6
6. to have the provider that I routinely see deliver my baby	1	2	3	4	5	6
PERSONALIZED CARE - *I expected:*						
7. my provider to care how I felt mentally as well as physically	1	2	3	4	5	6
8. my provider to be gentle during my exam	1	2	3	4	5	6
9. someone to listen to my problems	1	2	3	4	5	6
10. a referral when I tell the clinic/office staff about a problem	1	2	3	4	5	6
OTHER SERVICES - *I expected:*						
11. the services of a social worker to be part of the prenatal care	1	2	3	4	5	6
12. the services of a nutritionist to be part of prenatal care	1	2	3	4	5	6

SATISFACTION WITH PRENATAL CARE

SATISFACTION	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
INFORMATION - *I am satisfied with:*						
13. the services of a public health nurse as part of prenatal care	1	2	3	4	5	6
14. the explanation my provider gave to me of what was going to happen during my prenatal visits	1	2	3	4	5	6
15. the explanation my provider gave me about medical procedures	1	2	3	4	5	6
16. the information my provider gave me about how things are going with my pregnancy	1	2	3	4	5	6
17. the kinds of things my provider discussed during my prenatal visits	1	2	3	4	5	6
18. the explanation my provider gave me about what I can expect about parenting a newborn	1	2	3	4	5	6
19. the way my provider has prepared me for labor and delivery	1	2	3	4	5	6
PROVIDER CARE - *I am satisfied with:*						
20. the way my provider treats me	1	2	3	4	5	6
21. the respect that I am shown from my provider	1	2	3	4	5	6
22. the quality of care that I receive from my provider	1	2	3	4	5	6
23. the way I am made to feel that I am not wasting my provider's time	1	2	3	4	5	6
24. being able to ask questions without embarrassment	1	2	3	4	5	6
25. not having to repeat my story every time I come in for a visit	1	2	3	4	5	6
STAFF INTEREST - *I am satisfied with:*						
26. the way the staff expresses concern about my overall personal situation	1	2	3	4	5	6
27. the time the staff spends talking about things of interest to me	1	2	3	4	5	6
28. the way the staff treats me	1	2	3	4	5	6
29. the time the staff take with me even though I do not have problems with this pregnancy	1	2	3	4	5	6

SATISFACTION WITH PRENATAL CARE

	Satisfaction	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
30.	the interest and concern the staff have shown me	1	2	3	4	5	6
31.	the way the staff deals with all my medical problems	1	2	3	4	5	6
	SYSTEM CHARACTERISTICS - *I am satisfied with:*						
32.	the amount of time I wait to be seen by my provider	1	2	3	4	5	6
33.	the total amount of time I spend at the office/clinic	1	2	3	4	5	6
34.	the parking facilities at the office/clinic	1	2	3	4	5	6
35.	the waiting room facilities of the office/clinic	1	2	3	4	5	6
36.	the examination room of the office/clinic	1	2	3	4	5	6
37.	my ability to schedule prenatal visits at a time convenient for me	1	2	3	4	5	6
38.	how easy it is to reschedule my prenatal visits	1	2	3	4	5	6
39.	how easy it was to get prenatal care early in my pregnancy (that is, before the fourth month)	1	2	3	4	5	6
40.	having all the recommended tests	1	2	3	4	5	6
41.	the number of prenatal visits I made during the first six to seven months	1	2	3	4	5	6

Note. Adapted with permission from "Development and Testing of the Patient Expectations and Satisfaction with Prenatal Care Instrument," by M. A. Omar, R. F. Schiffman, and C. R. Bingham, 2001, *Research in Nursing and Health, 24,* p. 223. Copyright 2001 by M. Horodynski.

Appendix B

Quality of Prenatal Care Questionnaire

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Appendix C

PRENATAL INTERPERSONAL PROCESSES OF CARE

The following questions are about the care you have received, in general, at prenatal care visits for this pregnancy. Please rate each item on a scale of 1 to 5, where 1 is always and 5 is never. If you can't remember or don't know please circle 'don't know' for that item.

COMMUNICATION		Always	Often	Sometimes	Rarely	Never	Don't know
Empowerment/Self-Care							
1.	How often did providers tell you how to pay attention to your symptoms and when to call the doctor?	1	2	3	4	5	9
2.	How often did providers make you feel that your everyday activities such as diet and lifestyle would make a difference in your pregnancy?	1	2	3	4	5	9
3.	How often did providers tell you what you could do to take care of yourself and your pregnancy at home?	1	2	3	4	5	9
4.	How often did providers make you feel that following their advice would make a difference in your health or the health of your baby?	1	2	3	4	5	9
Elicitation /Responsiveness of Patient's Problems							
5.	How often did providers take your concerns seriously?	1	2	3	4	5	9
6.	How often did providers ignore what you told them?	1	2	3	4	5	9
7.	How often did providers listen carefully to what you had to say?	1	2	3	4	5	9
8.	How often did providers give you enough time to say what you thought was important?	1	2	3	4	5	9
Explanation of Processes of Care							
9.	How often did providers tell you what they were doing as they gave you a physical examination?	1	2	3	4	5	9
10.	How often did providers explain why a test (such as an ultrasound, blood or urine test) was being done?	1	2	3	4	5	9

SATISFACTION WITH PRENATAL CARE

DECISION MAKING		**Always**	**Often**	**Sometimes**	**Rarely**	**Never**	**Don't Know**
11.	How often did providers ask if you felt comfortable following advice that they gave you?	1	2	3	4	5	9
12.	How often did providers ask you how you felt about the advice they gave you?	1	2	3	4	5	9
13.	How often did providers ask if you would be able to follow their advice?	1	2	3	4	5	9
14.	How often did providers try to include you in decisions about your pregnancy care?	1	2	3	4	5	9
INTERPERSONAL STYLE		**Always**	**Often**	**Sometimes**	**Rarely**	**Never**	**Don't Know**
Perceived Discrimination							
15.	How often did you feel discriminated against by the providers or staff because you are receiving social assistance?	1	2	3	4	5	9
16.	How often did you feel discriminated against by the providers or staff because of your race or ethnicity?	1	2	3	4	5	9
17.	How often did you feel discriminated against by the providers or staff because of how much money you have?	1	2	3	4	5	9
18.	How often did you feel discriminated against by the providers or staff because of how well you speak English?	1	2	3	4	5	9
19.	How often did you feel discriminated against by the providers or staff because of your education?	1	2	3	4	5	9
20	How often did the providers or staff have a negative attitude toward you?	1	2	3	4	5	9
21.	How often did the providers or staff make you feel inferior (like you were less important than they were)?	1	2	3	4	5	9

SATISFACTION WITH PRENATAL CARE

INTERPERSONAL STYLE		Always	Often	Sometimes	Rarely	Never	Don't Know
Respectfulness/Emotional Support							
22.	How often were providers compassionate and caring?	1	2	3	4	5	9
23.	How often did providers compliment you on how well you take care of yourself during your pregnancy?	1	2	3	4	5	9
24.	How often did providers help you feel less worried about your pregnancy?	1	2	3	4	5	9
25.	How often were you asked if you would like to bring your husband, partner or someone important to you to your next prenatal visit?	1	2	3	4	5	9
26.	How often did providers seem to care about you as a person?	1	2	3	4	5	9
27.	How often did providers address you by the name that you prefer?	1	2	3	4	5	9
Friendliness and Courteousness							
28.	How often did providers make you feel as if you weren't welcome?	1	2	3	4	5	9
29.	How often were providers rude to you?	1	2	3	4	5	9
30.	How often did providers treat you in a friendly and courteous manner?	1	2	3	4	5	9

Note. Adapted with permission from Consumer Assessment of the Quality of Interpersonal Processes of Prenatal Care Among Ethnically Diverse Low-income Women: Development of a New Measure, by S. T. Wong, C. C. Korenbrot, A. L. Stewart, 2004, *Women's Health Issues, 14,* p. 127-128. Copyright 2004 by S. T. Wong.

APPENDIX D

DEMOGRAPHIC AND PREGNANCY QUESTIONNAIRE

The following questions are about your pregnancy and yourself. Please read each statement carefully and check the box next to the response that best applies to you and fill in the blanks where indicated.

1. **Date you are completing this questionnaire: ____ ____/___ ____/___ ___ ___**
   Day Month Year
2. **Where are you completing this questionnaire?** (check the box next to your response)
   - ❒ St. Boniface Hospital
   - ❒ Women's Hospital, Health Sciences Centre
   - ❒ Private Physician's Office
   - ❒ Community Clinic (e.g Mount Carmel, Klinic, Access Centre)
   - ❒ Home
   - ❒ Other (specify) _____
3. **What is your expected date of delivery, or your due date?**
   ____ ____/___ ____/___ ___ ___ ___
   Day Month Year
4. **Where are you planning on having your baby?** (check the box next to your response)
   - ❒ Hospital
   - ❒ Home
   - ❒ Other (specify) _____
5. **How many weeks pregnant are you today?** _____ weeks
6. **How many weeks pregnant were you when you first found out you were pregnant for sure with a pregnancy test or seeing a doctor or nurse?**
   _____weeks
7. **How many weeks or months pregnant were you when you had your first visit for prenatal care with your doctor, midwife or nurse practitioner (do not count a visit that was only for a pregnancy test)?**
   _____weeks_____months

8. **How many days or weeks was it from the time you made your first prenatal appointment until the actual day of your visit?** _____days _____ weeks

9. **About how many visits for prenatal care did you have during this pregnancy (if you do not know please give us your best guess)?**_____ number of visits

10. **From which of the following types of providers did you receive prenatal care?** (check the box next to your response)

Obstetrician

❒ Yes if yes, how many visits? _____
❒ No

Family Doctor

❒ Yes if yes, how many visits? _____
❒ No

Midwife

❒ Yes if yes, how many visits? _____
❒ No

Nurse Practitioner

❒ Yes if yes, how many visits? _____
❒ No

Other (specify) _____

❒ Yes if yes, how many visits? _____
❒ No

11. **Where did you receive most of your prenatal care?** (check the box next to your response)
    - ❒ Private Physician's Office
    - ❒ Outpatient department of a hospital (St. Boniface Hospital or Women's Hospital)
    - ❒ Home
    - ❒ Community Clinic or Access Centre (e.g. Mount Carmel Clinic, Klinic, Access Centre)
    - ❒ Other (specify)_____

12. **Did you visit an emergency room or obstetrical triage department during this pregnancy for a problem related to your pregnancy?**
    - ❒ Yes if yes, how many times? _____
    - ❒ No

13. Were you admitted into the hospital during this pregnancy for a problem related to this pregnancy?

- ❒ Yes if yes, how many times? _____
- ❒ No

14. Please indicate if you have had any of the following conditions <u>prior to getting pregnant</u>: (check the box next to your response)

- ❒ Any gynaecological surgery
- ❒ Kidney disease
- ❒ Diabetes
- ❒ Heart Disease
- ❒ Other chronic health conditions (specify)_____

15. Have you had any of the following conditions <u>during this pregnancy?</u> (check the box next to your response)

- ❒ Vaginal bleeding before 20 weeks of pregnancy
- ❒ Vaginal bleeding at or after 20 weeks of pregnancy
- ❒ Diabetes related to pregnancy (Gestational Diabetes)
- ❒ Low level of iron (hemoglobin) in your blood
- ❒ High blood pressure
- ❒ Increased amniotic fluid around your unborn baby (found by ultrasound)
- ❒ Poor growth of your unborn baby
- ❒ Water broke (rupture of membranes) prior to the start of labor
- ❒ Twins or triplets

16. Women also receive other types of prenatal services and education when they are pregnant.
Did you participate in any of the following programs during this pregnancy? (check the box next to your response)

<u>Healthy Baby/Healthy Start Program</u>

- ❒ Yes if yes, how many times? _____
- ❒ No

<u>Childbirth Education/Prenatal Classes</u>

- ❒ Yes if yes, how many classes did you attend? _____
- ❒ No

<u>Families First Program (Home Visitor)</u>

- ❒ Yes
- ❒ No

Antenatal Home Care Program

- ❒ Yes
- ❒ No

17. **Including this pregnancy, how many times have you been pregnant? This includes pregnancies that ended in a miscarriage, abortion, or tubal pregnancy** _____ (number of) pregnancies

18. **How many live born children have you had?** _____(number of live born children)

19. **If you have had previous deliveries please identify if you have experienced any of the following**: (check the box next to your response)
    - ❒ Hemorrhage after delivery
    - ❒ A baby weighing more than 9 pounds
    - ❒ A baby weighing less than 5 pounds
    - ❒ High blood pressure
    - ❒ Cesarean section delivery (c-section)
    - ❒ Still birth or death of a baby in the first month after birth
    - ❒ Long or difficult labour

20. **When you became pregnant with this pregnancy were you trying to become pregnant?**
    - ❒ Yes
    - ❒ No

21. **How did you feel when you found out you were pregnant with this baby? Were you…**(check the box next to your response)
    - ❒ Very unhappy to be pregnant
    - ❒ Unhappy to be pregnant
    - ❒ Not sure
    - ❒ Happy to be pregnant
    - ❒ Very happy to be pregnant

The following questions are about personal information related to yourself. Please fill in the blanks or check the box that best applies to you.

22. **What is your age in years?** _____years

23. What is your current marital status? (check the box next to your response)

- ❒ Married and living with spouse
- ❒ Common-law relationship or live-in partner
- ❒ Single – never married
- ❒ Divorced
- ❒ Separated
- ❒ Widowed

24. What is your highest level of education? (check the box next to your response)

- ❒ No schooling
- ❒ Incomplete Elementary school
- ❒ Complete Elementary school
- ❒ Incomplete Junior High school
- ❒ Complete Junior High school
- ❒ Incomplete High school
- ❒ Complete High school
- ❒ Incomplete Non-university (technical/vocational)
- ❒ Complete Non-university (technical/vocational)
- ❒ Incomplete University
- ❒ Diploma/Certificate (e.g. hygienist)
- ❒ Bachelor's Degree
- ❒ Professional Degree (Vet., Dr., Law)
- ❒ Master's Degree
- ❒ Doctorate

25. How many years of formal education have you completed starting with grade one and not counting repeated grades at the same level?
_____ years

26. What is your current postal code (first 3 digits)? ____ ____ ____

27. Have you worked at a paid job of any kind <u>during your current pregnancy</u>?

- ❒ Yes — If yes, on average, how many hours did you work for pay each week during your pregnancy? (This total includes all of your jobs: full-time and part-time) _____ hours
- ❒ No

28. We would like to know the total income of all the members of your household for this past year before tax and deductions. Please remember that your response will be kept confidential. (check the box next to your response)

- ❒ No income
- ❒ Under $20,000
- ❒ $20,000-39,999
- ❒ $40,000-59,999
- ❒ $60,000-79,999
- ❒ $80,000-99,999
- ❒ $100,000 or over

29. Which of the following best describes your racial/ethnic background? Would you say... (check the box next to your response)

- ❒ Aboriginal – Inuit
- ❒ Aboriginal – Métis
- ❒ Aboriginal - First Nations
- ❒ Arab/West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan)
- ❒ Black (e.g., African, Haitian, Jamaican, Somali)
- ❒ Chinese
- ❒ Filipino
- ❒ Japanese
- ❒ Korean
- ❒ Latin American
- ❒ South Asian (e.g., East Indian, Pakistani, Punjabi, Sri Lankan)
- ❒ South East Asian (e.g., Cambodian, Indonesian, Laotian, Vietnamese)
- ❒ White (Caucasian)
- ❒ Other (please specify) _____

30. Were you born in Canada?

- ❒ Yes
- ❒ No If no what was your country of birth? _____

  What is the total number of years you have lived in Canada? ____ years

31. Are you now, or have you ever been, a landed immigrant in Canada?

- ❒ Yes
- ❒ No

32. Do you currently have refugee status in Canada?

- ❒ Yes
- ❒ No

Appendix E
Perceived Stress Scale

This questionnaire will ask you about the amount of stress you experienced during your pregnancy.

For each of the four questions, respond by placing a check mark in the box that describes how often you felt or thought a certain way, choosing from the following answers: never, almost never, sometimes, fairly often, or very often.

	Never	Almost Never	Sometimes	Fairly Often	Very Often
During your pregnancy, how often did you feel that you were unable to control the important things in your life?	1	2	3	4	5
During your pregnancy, how often did you feel confident about your ability to handle your personal problems?	1	2	3	4	5
During your pregnancy, how often did you feel that things were going your way?	1	2	3	4	5
During your pregnancy, how often did you feel difficulties were piling up so high that you could not overcome them?	1	2	3	4	5

Note. Adapted with permission from A Global Measure of Perceived Stress: by S. Cohen, T. Kamack, R. Mermelstein, 1983, *Journal of Health and Social Behaviour, 24,* p. 385-396. Copyright 1983 by American Sociological Association.

Appendix F
Winnipeg Regional Health Authority Research Access Approval Certificate

Winnipeg Regional Health Authority / Office régional de la santé de Winnipeg
Caring for Health / À l'écoute de notre santé

200 – 1155 Concordia Avenue
Winnipeg, Manitoba
R2K 2M9 CANADA

July 7, 2011

Ms. Patricia Gregory
Program Director, Women's Health Program
Women's Hospital
Health Sciences Centre
WR117 – 735 Notre Dame Avenue
Winnipeg, MB R3E 0L8

Dear Ms. Gregory:

Re: "Factors Related to Woman's Experiences and Satisfaction with Prenatal Care" – WRHA Reference No: 2011-015

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.

Your research access is also approved pending confirmation that the following conditions are met or agreed to:

- You, your co-investigators, and your research assistants comply with the relevant privacy legislation as indicated below.
  - [X] *The Personal Health Information Act*
  - [ ] *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 Judy Dyrland, Concordia Hip & Knee Institute, WRHA, 200 – 1155 Concordia Avenue, Winnipeg, MB R2K 2M9;
- 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.
- You agree to acknowledge the WRHA and/or affiliated organizations in any peer-reviewed publications of the results of this study.

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.

Yours Sincerely,

Dr. Michael Moffatt, M.D., MSo FRCPC
Executive Director, Division of Research and Applied Learning
Chair, Research Review Committee
Winnipeg Regional Health Authority

cc. Ms. Arlene Wilgosh, WRHA
Dr. John Arnett, Chair, HREB

Encl: ***PHIA Agreement***

Appendix G
St. Boniface Hospital Research Review Committee Approval Form

Hôpital St-Boniface Hospital

409 Taché Ave, Winnipeg MB Canada R2H 2A6
T. (204) 233-8563 F. (204) 231-0640

Research Review Committee
Approval Form

Principal Investigator: **Ms. P. Gregory**

RRC Reference Number: **RRC/2011/1141**

Date: **August 23, 2011**

Protocol Title: **Factors Related to Women's Experiences and Satisfaction with Prenatal Care**

The following is/are approved for use:

- **Ethics Submission reviewed at August 17, 2011 RRC meeting**
- **Prenatal Care Provider letter reviewed at August 17, 2011 RRC meeting**
- **Permission to Access Patient Population letter reviewed at August 17, 2011 RRC meeting**
- **Hospital Manager/Director letter reviewed at August 17, 2011 RRC meeting**
- **Midwifery Manager/Director letter reviewed at August 17, 2011 RRC meeting**
- **Prenatal Instructor Manager letter reviewed at August 17, 2011 RRC meeting**
- **Research Subject Information and Consent Form, version 2 dated May 18, 2011**
- **Feedback to Participants letter reviewed at August 17, 2011 RRC meeting**
- **Participant letter reviewed at August 17, 2011 meeting**
- **Study Information, version 2 dated May 18, 2011**
- **Screening Questionnaire reviewed at August 17, 2011 RRC meeting**
- **Women's Experiences and Satisfaction with Prenatal Care Questionnaire reviewed at August 17, 2011 RRC meeting**
- **Demographic and Pregnancy Questionnaire reviewed at August 17, 2011 RRC Meeting**

The above was approved by Dr. B. Light, Chairperson, Research Review Committee, St. Boniface General Hospital, on behalf of the Committee. As the recommendations by the Research Review Committee have been met, final approval is now granted.

Any significant changes to the study Protocol and/or Informed Consent Form, must be reported to the Research Review Committee along with any other documents required as per Standard Operating Procedures for Clinical Investigators.

Sincerely yours,

Dr. B. Light
Chairperson, Research Review Committee
St. Boniface General Hospital

Please quote the above reference number on all correspondence.
Inquiries should be directed to the RRC Secretary
Telephone: (204) 233-8623 **Fax:** (204) 237-9860
MB Canada R2H 2A6

saintboniface.ca

Espoir et guérison
Hope and Healing

Appendix H
Health Sciences Centre Research Access Approval Certificate

Health Sciences Centre
Winnipeg

Office of the Director of Research

Dial Direct 204-787-4831
Fax 204-787-4547

June 9, 2011

Patricia Gregory
Principal Investigator
WR117

Dear Patricia Gregory

RE: FACTORS RELATED TO WOMEN'S EXPERIENCES AND SATISFACTION WITH PRENATAL CARE.

ETHICS #: E2011:037 RIC #: RI2011:081

The above-named protocol, **has been evaluated and approved** by the HSC Research Impact Committee.

The Department of Research wishes you much success with your study.

Sincerely

Karen Shaw-Allan
Research Protocol Officer
Health Sciences Centre

cc: Director of Research
Ancillary Services, Finance Division

M57 - 820 Sherbrook Street, Winnipeg, Manitoba Canada R3A 1R9 www.hsc.mb.ca

An operating division of the Winnipeg Regional Health Authority / Office régional de la santé de Winnipeg

Affiliated with the University of Manitoba

Appendix I

Estimation of Sample Size

The following formula was used to conduct a power analysis (Polit & Beck, 2008)

$$N = \frac{L}{Y} + k + 1$$

N = estimated number of participants needed
L = tabled value for the desired α and power
k = number of predictors
y = estimated effect size

The value of R^2 must be predicted, in this case it is estimated that the effect size will be moderate (R^2 = .13). For multiple regression, the estimated population effect size (*y*) is calculated:

$$y = \frac{R^2}{1-R^2}$$

$$y = \frac{.13}{1-.13} = .149 = \frac{.13}{.87}$$

According to a table from Cohen and Cohen (1983) the value for *L* when α = .05 and power is .80, where there are up to 17 predictors, the value for *L* would be 20.4. Therefore:

$$154.91 = \frac{20.4}{.149} + 17 + 1$$

Therefore a sample of about 155 participants would needed to detect a population R^2 of .13 with 17 predictors, with a 5% chance of a Type I error and 20% chance of a Type II error.

(Cohen & Cohen, 1983; Polit & Beck, 2008; Damman, Henriks, and Sixma, 2009)

Appendix J
Ethics Certificate

UNIVERSITY OF MANITOBA | Ethics
Office of the Vice-President (Research)

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

APPROVAL CERTIFICATE

May 26, 2011

TO: **Patricia Gregory** (Advisor M. Heaman)
Principal Investigator

FROM: **Stan Straw, Chair**
Education/Nursing Research Ethics Board (ENREB)

Re: **Protocol #E2011:037**
"Factors Related to Women's Experiences and Satisfaction with Prenatal Care"

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 the Office of Research Services, fax 261-0325 - please include the name of the funding agency and your UM Project number. This must be faxed before your account can be accessed.**

- **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.**

Bringing Research to Life

UNIVERSITY OF MANITOBA | Office of the Vice-President (Research and International)
Research Ethics and Compliance

Human Ethics
208 - 194 Dafoe Road
Winnipeg, MB
Canada R3T 2N2
Fax 204-269-7173

RENEWAL APPROVAL

June 13, 2012

TO: **Patricia Gregory**
Principal Investigator

FROM: **Stan Straw, Chair**
Education/Nursing Research Ethics Board (ENREB)

Re: **Protocol #E2011:037**
"Factors Related to Women's Experiences and Satisfaction with Prenatal Care"

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.

Appendix K

Subject Recruitment Form: Factors Related to Pregnant Women's Experiences and Satisfaction with Prenatal Care

To be completed for prenatal patients (by clerk)

Inclusion Criteria

Criterion	YES	NO
18 years or older		
≥ 36 weeks gestation		
Has had three or more prenatal visits		
Lives in Winnipeg, East or West St. Paul		
Is able to speak, understand, and read English		

If all "yes" boxes are checked proceed to next section
If any "no" boxes are checked, the woman is not eligible for the study

Exclusion Criteria

Criterion	YES	NO
Fetal anomaly or fetal death		
Is an employee of the WRHA		
Psychiatric Disorder requiring psychotropic medication		
Mentally challenged (not able to make decisions for self)		
Woman resides in jail or is being held in remand		

If all "NO" boxes are checked, patient meets criteria for study.

☐ Woman meets criteria for study ☐ Woman does not criteria for study

If woman meets the criteria for the study please use the following script to determine their interest in receiving a package of questionnaires to complete

a. No research assistant available:

I would like to make you aware of an opportunity to participate in a study on women's experiences and satisfaction with prenatal care. Can I give you a letter of invitation to read, if you are interested in receiving a package of questionnaires to complete, please ask me for one. A Tim Horton's gift certificate is provided in recognition of your efforts in completing the questionnaires.

b. Research Assistant available

"I would like to make you aware of an opportunity to participate in a study on women's experiences and satisfaction with prenatal care. Would you be interested in speaking with the research assistant to learn more about the study? A Tim Horton's gift certificate will be provided in recognition of your efforts in completing the questionnaires."

Appendix L
Research Subject Information and Consent Form

Faculty of Nursing

UNIVERSITY
OF MANITOBA

RESEARCH SUBJECT INFORMATION AND CONSENT FORM

Research Project Title: Factors Related to Women's Experiences and Satisfaction with Prenatal Care

Principal Investigator: Patricia Gregory, RN, PhD student, Department of Applied Health Sciences, Room 268, Helen Glass Centre for Nursing, University of Manitoba, Winnipeg, MB, R3T 2N2, Phone 204-771-2752

Research Supervisor: Dr. Maureen Heaman, Professor, Faculty of Nursing, Room 268 Helen Glass Centre for Nursing, University of Manitoba, Winnipeg, MB, R3T 2N2. Phone 204-474-6222.

Sponsor (Funding Agency): Manitoba Centre for Nursing and Health Research

You are invited to take part in a research study. This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you a basic idea of what the research is about and about what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask the research assistant or contact the researcher, Patricia Gregory (ph. 204-771-2752), or her research supervisor, Dr. Maureen Heaman (ph. 204-474-6222). Please take the time to read this carefully and to understand any accompanying information.

Purpose of the Study:

The purpose of this study is to identify the factors related to pregnant women's experiences and satisfaction with prenatal care. This study is being conducted for the researcher's thesis. The information obtained from this study may be used by health care planners and health care providers to improve the delivery of prenatal care and to develop new models of prenatal care that may improve pregnant women's experiences with prenatal care.

Women Who May Participate in the Study:

Women are being asked to take part in this study if they are currently pregnant, 18 years of age or older, at 36 weeks of pregnancy or more, with at least 3 prenatal visits, and living in Winnipeg.

Procedures:

If you agree to take part in this study, you will be asked to complete a series of questionnaires. You will be asked a number of questions about your expectations of prenatal care, about the care

you received, and about whether you were satisfied with the care you received. You will also be asked some personal questions about your pregnancy and basic demographic questions about yourself. This will take about 40 minutes of your time.

Confidentiality:

All information will be kept confidential. Your questionnaire forms will be identified with a unique code number in order to track the questionnaires for administrative purposes only. Your name will not appear anywhere on the questionnaire forms and your name will not be linked to the code number on the questionnaire in any way. The consent forms will be stored separately from the questionnaires in a locked filing cabinet at the University of Manitoba. No one other than the researcher Patricia Gregory, her research supervisor, Dr. Maureen Heaman and the research assistant will have access to the signed consent forms. The consent forms and completed questionnaire forms will be destroyed 5 years after the study ends (July 2017). Only the researcher, her thesis supervisor, the research assistant, and a data entry clerk will have access to the answers on your questionnaires. Patricia Gregory, Dr. Maureen Heaman, the research assistant, and the data entry clerk have all signed a pledge of confidentiality. This research will lead to the development of a thesis presentation and be published as a dissertation. Results of the study may be presented in professional meetings, to policy makers, and published in journals. Only grouped data will be reported. Your individual identity or responses will not be revealed in reports, presentations, or articles that describe the results of this study.

Certain authorized organizations may inspect your research records for quality assurance purposes. These organizations may include representatives of the study sponsor (funding agency), the Research Review Committee of the Winnipeg Regional Health Authority, St Boniface Hospital, or the Health Sciences Center (if you are a patient of these institutions). The University of Manitoba Research Ethics Board and representatives of the University of Manitoba Research Quality Management/Assurance office may also require access to your questionnaires and consent forms for safety and quality assurance purposes. It will not be possible to link your name on the consent form to your questionnaire, as your name is not on the questionnaire.

Risks:

There are no known risks to participating in this study, however if you reveal a situation of child abuse, the research assistant will contact Child and Family Services to notify them of the information as required by law.

Benefits:

There are no direct benefits involved in participating in this study. However, your answers may help to improve prenatal care for other women.

Voluntary Participation and Withdrawal:

Your participation in this study is completely voluntary. Your decision about whether or not you take part will not affect the care and service you receive in any way. You also have the right to not answer any of the questions you do not wish to answer. You are free to withdraw from the

study at any time prior to submitting a completed questionnaire by not returning the questionnaire to the research assistant without prejudice or consequence. You should feel free to ask for clarification or new information at any time by speaking with the research assistant, or contacting the researcher, Patricia Gregory (ph. 204-771-2752) or her research supervisor, Dr. Maureen Heaman, (ph. 204-474-6222).

Your time is valuable. Should you decide to take part in this study, you will receive a $5.00 Tim Horton's gift certificate with your package of questionnaires.

Feedback to Participants:

We will send you a brief summary (1-3 pages) of the results of the study if you would like one. Results are expected to be available by July 2012. Please complete the "Feedback to Participants" sheet at the end of this consent form if you would like to receive a summary of the results. This sheet with your name will be stored separately from your questionnaire in a locked drawer at the University of Manitoba and destroyed after the summary of results has been sent.

Statement of Consent

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project, and agree to participate as a subject. In no way does this waive your legal rights, nor does it release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to refrain from answering any questions you prefer to omit or withdraw from the study by not returning your questionnaire without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation by contacting either Patricia Gregory, (Ph. 204-771-2752) or her research supervisor, Dr. Maureen Heaman (Ph. 204-474-6222).

This research has been approved by the Education/Nursing Research Ethics Board of the University of Manitoba. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator (HEC) at 204-474-7122, or e-mail margaret_bowman@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

_____ _____

Participant's Signature Date

Printed name of above:_____

_____ _____

Researcher and/or Delegate's Signature Date

Printed name of above: _____

ALL SUBJECTS MUST SIGN AND DATE THEIR OWN SIGNATURE

Feedback to Participants

We will send you a brief summary (1-3 pages) of the results of the study if you would like one. Results are expected to be available by July 2012. If you would like to receive a copy of this optional summary, please indicate below and provide your mailing address or e-mail address. This information will be stored separately from your consent and your completed questionnaire.

I would like to receive information about the study findings: _____ Yes _____ No

I would like to receive the summary of results by:

☐ Mail (please provide complete mailing address):

_____

_____

☐ Email (please provide email address):

_____

Appendix M
Invitation to Participate

UNIVERSITY
OF MANITOBA

Faculty of Nursing

Invitation to Participate in a Study

Dear Pregnant Mother,

Thank you for your interest in learning more about this study. You are invited to take part in a research study entitled "Factors related to Women's Experiences and Satisfaction with Prenatal Care" that is being conducted by Patricia Gregory, RN, PhD student, and Dr. Maureen Heaman from the Faculty of Nursing at the University of Manitoba. This research has been approved by the Education/Nursing Research Ethics Board of the University of Manitoba.

The purpose of this study is to identify the factors related to pregnant women's experiences and satisfaction with prenatal care. Your participation in the study will give you an opportunity to contribute to the understanding of factors that may be used by health care planners and health care providers to improve prenatal care for women. Women are being asked to take part in this study if they are currently pregnant, 18 years of age or older, at 36 weeks of pregnancy or more, with at least three prenatal visits, and living in Winnipeg.

Taking part in the study is entirely voluntary. If you take part in the study you will be asked to complete a package of questionnaires while you are still pregnant. You are being asked to take the questionnaires home and return the completed questionnaires to the researcher using the stamped addressed envelope in the package. You will be asked about your expectations of prenatal care, and how satisfied you are with the care you received. In addition, you will be asked some personal questions about your pregnancy and basic demographic questions. It will take about 40 minutes of your time to complete the questionnaires. Your name will not appear anywhere on the questionnaire forms. You may refuse to answer any questions on the questionnaires and you may withdraw from the study prior to returning a completed questionnaire by not returning the questionnaire to the researcher.

Your time is valuable. Should you decide to take part in this research you will receive a $5.00 Tim Horton's gift certificate with your package of questionnaires. Please inform the person who gave you this invitation if you would like to receive the questionnaire package.

On behalf of myself and my research supervisor, Dr. Heaman, I would like to take this opportunity to thank you for considering this request. You should feel free to ask questions at any time during or after the study from either Patricia Gregory, RN, PhD student, (Ph. 204-771-2752) or her research supervisor, Dr. Maureen Heaman (Ph. 204-474-6222).

Yours truly,

Patricia Gregory, RN, Ph.D. Candidate
Room 268, Helen Glass Centre for Nursing,
University of Manitoba
Winnipeg, MB, R3T 2N2 Canada
Phone: (204)771-2752; Fax: (204)474-6013;
Email: umgrego5@cc.umanitoba.ca

Appendix N
Study Information

UNIVERSITY OF MANITOBA

Study Information

Research Project Title: Factors Related to Women's Experiences and Satisfaction with Prenatal Care

Principal Investigator: Patricia Gregory, RN, PhD Student, Department of Applied Health Sciences, Room 268, Helen Glass Centre for Nursing, University of Manitoba, Winnipeg, MB, R3T 2N2, Phone 204-771-2752

Research Supervisor: Dr. Maureen Heaman, Professor, Faculty of Nursing, Room 268, Helen Glass Centre for Nursing, University of Manitoba, Winnipeg, MB, R3T 2N2. Phone 204-474-6222.

Sponsor (funding agency): To be determined

This information sheet, which you may keep for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask by contacting the researcher, Patricia Gregory (ph. 204-771-2752) or her research supervisor, Dr. Maureen Heaman (ph. 204-474-6222). Please take the time to read this carefully and to understand any accompanying information.

Purpose of the Study:

The purpose of this study is to identify the factors related to pregnant women's experiences and satisfaction with prenatal care. This study is being conducted for the researcher's thesis. The information obtained from this study may be used by health care planners and health care providers to improve the delivery of prenatal care and to develop new models of prenatal care that may improve pregnant women's experiences with prenatal care.

Women Who May Participate in the Study:

Women are being asked to take part in this study if they are currently pregnant, 18 years of age or older, at 36 weeks of pregnancy or more, with at least 3 prenatal visits and living in Winnipeg.

Procedures:

If you agree to take part in this study you will need to complete the series of questionnaires enclosed in this package. These questions are about your expectations of prenatal care, about the

care you received, and about whether you were satisfied with the care you received. You will also be asked some personal questions about your pregnancy and basic demographic questions about yourself. This will take about 40 minutes of your time

Confidentiality:

All information gathered for this study will be kept strictly confidential. Your questionnaire forms will be identified with a unique code number in order to track the questionnaires for administrative purposes only. Your name will not appear anywhere on the questionnaire forms and therefore cannot be linked in any way to the code number. Your completed questionnaire forms will be stored in a locked cabinet at the University of Manitoba and will be destroyed 5 years after the study ends (July 2017). Only the researcher, Patricia Gregory, her research supervisor, Dr. Maureen Heaman, and a data entry clerk will have access to the answers on your questionnaires. This research will lead to the development of a thesis presentation and be published as a dissertation. Results of the study may be presented in professional meetings, to policy makers, and published in journals. Only grouped data will be reported. Your individual responses will not be revealed in reports, presentations, or articles that describe the results of this study.

Certain authorized organizations may inspect your research records for quality assurance purposes. These organizations may include representatives of the study sponsor (funding agency), the Research Review Committee of the Winnipeg Regional Health Authority, St. Boniface Hospital or the Health Sciences Centre (if you are a patient of these institutions). The University of Manitoba Research Ethics Board and representatives of the University of Manitoba Research Quality Management/Assurance office may also require access to your questionnaires for safety and quality assurance purposes. As the questionnaires do not include your name, your identity is protected.

Risks:

There are no known risks to participating in this study.

Benefits:

There are no direct benefits involved in participating in this study. However, your answers may help to improve prenatal care for other women.

Voluntary Participation and Withdrawal:

Your participation in this study is completely voluntary. Your decision about whether or not to take part will not affect the care and service you receive in any way. You may refrain from answering any questions you prefer to omit. You are free to withdraw from the study by not returning the questionnaire to researcher without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for

clarification, or new information throughout your participation by contacting either Patricia Gregory, (Ph. 204-771-2752) or her research supervisor, Dr. Maureen Heaman (Ph. 204-474-6222).

initial consent, so you should feel free to ask for clarification or new information throughout your participation by contacting either Patricia Gregory, (Ph. 204-771-2752) or her research supervisor, Dr. Maureen Heaman (Ph. 204-474-6222).

Your time is valuable. Should you decide to participate in this research you will receive a $5.00 Tim Horton's gift certificate with your package of questionnaires.

Your completion and return of the attached questionnaire booklet indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities.

Feedback to Participants:

We will send you a brief summary (1-3 pages) of the results of the study if you would like one. Results are expected to be available by July 2012. Please complete the "Feedback to Participants" sheet enclosed in your questionnaire package if you would like to receive a summary of the results and mail it back in the letter sized stamped addressed envelope separate from your questionnaire. This sheet with your name will be stored separately from your questionnaire in a locked drawer at the University of Manitoba and destroyed after the summary of results has been sent.

This research has been approved by the Education/Nursing Research Ethics Board of the University of Manitoba. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator (HEC) at 204-474-7122. Please keep this information sheet for your records and reference.

If you agree to take part in this study, please complete the questionnaire booklet and return the completed questionnaire booklet in the stamped addressed envelope to the researcher.

Feedback to Participants

We will send you a brief summary (1-3 pages) of the results of the study if you would like one. Results are expected to be available by July 2012. If you would like to receive a copy of this optional summary, please indicate below and provide your mailing address or e-mail address. This information will be stored separately from your completed questionnaire.

I would like to receive information about the study findings: _____ Yes _____ No

I would like to receive the summary of results by:

☐ Mail (please provide complete mailing address):

_____

_____

☐ Email (please provide email address):

_____

Appendix 0

Percentage of Missing Data Per Variable

Table O

Percentage of Missing Data per Variable

Variable	% Missing Data	%Missing Data after Case Mean Imputation
Independent Variables		
PESPC Expectations	5.6%	1.4%
PIPC Communication	2.8%	2.3%†
PIPC Decision Making	1.4%	1.4%†
PIPC Interpersonal Style	10.2%	3.7%*†
QPCQ	13.9%	2.3%
PSS	0.9%	0.9%
Parity	0.5%	N/A
Pregnancy Risk	0.0%	N/A
Education	5.1%	N/A
Race/Ethnicity	0.9%	N/A
Age	0.9%	N/A
Income	5.1%	N/A
Marital Status	0.9%	N/A
Dependent Variables		
PESPC Overall Satisfaction	10.2%	1.9%
PESPC Satisfaction with Information	3.2%	0.5%
PESPC Satisfaction with Provider Care	0.9%	0.0%
PESPC Satisfaction with Staff interest	3.2%	1.4%
PESPC Satisfaction with System Characteristics	5.6%	0.5%

Note. * after removal of PIPC #15; † = does not include imputation for *don't know* responses; PESPC = Patient Expectations and Satisfaction with Prenatal Care Instrument; PIPC = Prenatal Interpersonal Processes of Care Instrument; QPCQ = Quality of Prenatal Care Questionnaire; PSS = Perceived Stress Scale.

Appendix P
Number of Missing Values per Case per Variable, Instrument Scores

Table P

Percentage of Missing Data per Case per Variable (Instrument Scores)

Variable	Number of Cases (% total cases)	% Missing Items in Variable
PESPC Expectations (13 items)		
Complete	204 (94.4%)	0%
1 item missing	9 (4.2%)	7.7%
2 items missing	1 (0.5%)	15.4%
3 items missing	1 (0.5%)	23.1%
4 items missing	1 (0.5%)	30.8%
PIPC Communication (10 items)		
Complete	210 (97.2%)	0%
1 item missing	3 (1.4%)	10.0%
2 items missing	1 (0.5%)	20.0%
3 items missing	1 (0.5%)	30.0%
All items missing	1 (0.5%)	100.0%
PIPC Decision Making (4 items)		
Complete	213 (98.6%)	0%
1 item missing	1 (0.5%)	25.0%
4 items missing	2 (0.9%)	100.0%
PIPC Interpersonal Style (16 items)		
Complete	194 (89.8%)	0%
1 item missing	12 (5.6%)	6.3%
2 items missing	4 (1.9%)	12.5%
3 items missing	1 (0.5%)	18.8%
4 items missing	1 (0.5%)	25.0%
5 items missing	2 (0.9%)	31.3%
6 items missing	1 (0.5%)	37.5%
All items missing	1 (0.5%)	100.0%
QPCQ (46 items)		
Complete	186 (86.1%)	.0%
1 item missing	23 (10.6%)	2.2%
2 items missing	4 (1.9%)	4.3%
4 items missing	2 (0.9%)	8.7%
6 items missing	1 (0.5%)	13.0%
PSS (4 items)		
Complete	214 (99.1%)	.0%
4 items missing	2 (0.9%)	100.0%

Note. PESPC = Patient Expectations and Satisfaction with Prenatal Care; PIPC = Prenatal Interpersonal Processes of Care questionnaire; QPCQ = Quality of Prenatal Care Questionnaire; PSS = Perceived Stress Scale

Appendix Q

Prenatal Interpersonal Processes of Care

Percentage of *Don't Know* Responses Per Variable

Table Q

Percentage of Missing Data per Variable

Variable	% *don't know* Responses	% *don't know* Responses after Case Mean Imputation	% of the total of *don't know* and missing responses after imputation
PIPC Communication	8.8%	3.7%	4.6%
PIPC Decision Making	8.8%	4.2%	5.1%
PIPC Interpersonal style	20.8%*	7.4%*	9.7%*

Note. * after removal of PIPC #15; PIPC = Prenatal Interpersonal Processes of Care Instrument.

Appendix R

Comparison of Cases With and Without Missing Values for Overall Satisfaction Data and the Satisfaction Subscales

Table R1

Comparison of Cases (Missing and Non-missing) for Satisfaction on Questionnaire Scores

		Missing Data	Complete Data				
Satisfaction	Variable	*M (SD)*	*M (SD)*	*df*	*t*	*p*	*M* Difference
Overall satisfaction	Expectations	4.05 (0.63)	4.07 (0.68)	(202)	-0.154	.878	-.03
Information		4.20 (0.57)	4.10 (0.68)	(202)	0.495	.621	.14
Provider Care		4.23 (0.76)	4.07 (0.67)	(202)	-0.782	.737	.16
Staff Interest		4.22 (0.56)	4.07 (0.68)	(202)	0.485	.628	.15
System		3.72 (0.55)	4.19 (0.67)	(202)	-1.688	.093	-.37
Overall satisfaction	PIPC Communication	4.15 (0.63)	4.09 (0.86)	(208)	-0.313	.755	.06
Information		3.87 (0.66)	4.10 (0.84)	(208)	-0.713	.476	-.23
Provider Care		4.25 (0.07)	4.09 (0.84)	(208)	0.266	.791	.16
Staff Interest		4.22 (0.57)	4.09 (0.84)	(208)	0.366	.715	.13
System		4.26 (0.67)	4.08 (0.85)	(208)	0.703	.483	.18
Overall satisfaction	Decision Making	3.75 (1.46)	3.46 (1.41)	(211)	0.905	.366	.29
Information		3.14 (1.15)	3.50 (1.42)	(211)	-0.650	.517	-.35
Provider Care		3.38 (0.18)	3.49 (1.42)	(211)	-0.110	.912	-.11
Staff Interest		3.79 (2.48)	3.48 (1.38)	(211)	0.539	.591	.32
System		3.75 (1.29)	3.47 (1.42)	(211)	0.668	.505	.28
Overall satisfaction	Interpersonal	4.44(0.44)	4.53 (0.61)	(192)	-1.184	.557	-.09
Information		4.24(0.26)	4.53 (0.61)	(192)	-1.276	.203	-.35
Provider Care		4.50(0.00)	4.56 (0.60)	(192)	-0.127	.899	-.08
Staff Interest		4.88 (0.53)	4.57 (0.60)	(192)	0.865	.388	.30
System		4.17(0.27)	4.59 (0.61)	(192)	-1.700	.091	-.42
Overall satisfaction	QPCQ	3.94 (0.43)	3.97 (0.62)	(184)	-0.200	.842	-.03
Information		3.58 (0.41)	3.97 (0.60)	(184)	-1.137	.257	-.40
Provider Care		3.65 (0.00)	3.97 (0.60)	(184)	-0.525	.600	-.32
Staff Interest		4.18 (0.35)	3.96 (0.61)	(184)	0.788	.432	.22
System		4.06 (0.49)	3.10 (0.61)	(184)	0.450	.653	.10

Satisfaction	Variable	Missing Data *M (SD)*	Complete Data *M (SD)*	*df*	*t*	*p*	M Difference
Overall satisfaction	PSS	2.18 (0.82)	2.33 (0.74)	(212)	-0.880	.380	-.15
Information		2.21 (0.96)	2.32 (0.74)	(212)	-0.362	.718	-.10
Provider Care		2.38 (1.60)	2.31 (0.75)	(212)	0.113	.910	-.06
Staff Interest		1.71 (0.56)	2.33 (0.75)	(212)	-2.027	.044	-.62
System		2.27 (0.86)	2.32 (0.75)	(212)	-0.212	.833	-.05

Note. *p* (two-tailed); PIPC = Prenatal Interpersonal Processes of Care questionnaire; QPCQ = Quality of Prenatal Care Questionnaire; PSS = Perceived Stress.

Table R2

Comparison of Cases (Missing and Non-missing) for Satisfaction Data on Demographic and Pregnancy Characteristics (Continuous Variables)

		Missing Data	Complete Data				
Satisfaction	Variable	*M (SD)*	*M (SD)*	*df*	*t*	*p*	*M* Difference
Overall Satisfaction	Age	29.41 (5.31)	29.57 (5.50)	(212)	-0.128	.898	-0.16
Information		31.14 (4.02)	29.50 (5.51)	(212)	0.782	.435	1.65
Provider Care		29.50 (9.19)	29.55 (5.46)	(212)	-0.013	.989	-0.05
Staff Interest		31.00 (3.56)	29.50 (5.53)	(212)	0.711	.478	1.50
System		28.83 (6.16)	29.59 (5.44)	(212)	-0.467	.641	-0.76
Overall Satisfaction	Education	13.85 (4.43)	14.81 (3.21)	(203)	-1.220	.224	-0.96
Information		12.33 (3.50)	14.79 (3.33)	(203)	-1.778	.077	-2.46
Provider Care		11.00 (0.00)	14.74 (3.35)	(203)	-1.113	.267	-3.74
Staff Interest		15.00 (2.16)	14.71 (3.39)	(203)	0.227	.821	0.29
System		14.42 (5.30)	14.74 (3.21)	(203)	-0.319	.750	-0.32
Overall Satisfaction	Parity	1.00 (1.23)	0.81 (1.22)	(213)	-0.660	.510	0.19
Information		2.17 (1.72)	0.79 (1.19)	(213)	2.752	.006	1.37
Provider Care		2.00 (2.83)	0.82 (1.21)	(213)	1.359	.176	1.18
Staff Interest		0.57 (0.54)	0.84 (1.24)	(213)	-0.574	.567	-0.27
System		0.75 (0.87)	0.84 (1.24)	(213)	-0.240	.810	-0.09
Overall Satisfaction	Pregnancy Risk	3.10 (3.06)	2.68 (2.15)	(212)	0.806	.421	0.42
Information		2.17 (1.60)	2.74 (2.26)	(212)	-0.611	.542	-0.57
Provider Care		3.00 (2.83)	2.72 (2.25)	(212)	0.177	.860	0.28
Staff Interest		3.29 (2.36)	2.70 (2.25)	(212)	0.677	.499	0.59
System		3.33 (3.55)	2.68 (2.15)	(212)	0.974	.331	0.65
Overall Satisfaction	Gestation	37.50 (1.34)	38.17 (1.73)	(214)	-1.760	.080	-0.67
Information		37.43 (1.27)	38.12 (1.71)	(214)	-1.065	.288	-0.70
Provider Care		40.00 (1.41)	38.08 (1.70)	(214)	1.592	.113	1.92
Staff Interest		37.29 (1.11)	38.13 (1.71)	(214)	-1.293	.197	-0.84
System		37.25 (1.06)	38.15 (1.72)	(214)	-1.795	.074	-0.90
Overall Satisfaction	Gestation 1st visit	9.15 (4.01)	10.59 (3.43)	(199)	-1.742	.083	-1.44
Information		10.00 (5.76)	10.46 (3.45)	(199)	-0.313	.755	-0.46
Provider Care		8.00 (0.00)	10.47 (3.52)	(199)	-0.988	.325	-2.47
Staff Interest		6.50 (1.76)	10.56 (3.49)	(199)	-2.838	.005	-4.06
System		9.75 (4.62)	10.49 (3.45)	(199)	-0.703	.483	-0.74

Satisfaction	Variable	Missing Data *M (SD)*	Complete Data *M (SD)*	*df*	*t*	*p*	*M* Difference
Overall Satisfaction	# prenatal visits	13.52 (6.68)	12.46 (4.86)	(211)	0.912	.363	1.06
Information		12.00 (4.69)	12.58 (5.08)	(211)	-0.278	.781	-0.59
Provider Care		15.50 (7.78)	12.54 (5.05)	(211)	-0.823	.411	2.96
Staff Interest		14.57 (5.68)	12.50 (5.04)	(211)	1.066	.288	2.07
System		13.50 (7.22)	12.51 (4.92)	(211)	0.656	.512	0.99

Note. *p* (two-tailed); Education = years of education; Gestation = gestation at time of questionnaire completion.

Appendix S
Comparison of Cases With and Without Missing Values for Continuous Independent Variables

Table S

Comparison of Cases (Missing and Non-missing) for Continuous Independent Variables

Instrument	Variable	Missing Data *M (SD)*	Complete Data *M (SD)*	*df*	*t*	*p*	*M* Difference
Expectations	Age	30.08(4.54)	29.52(5.53)	(212)	0.346	.730	0.56
	Education	13.73(3.32)	14.77(3.35)	(203)	-1.007	.315	-1.05
	Parity	1.42 (1.73)	0.80 (1.18)	(213)	1.711	.089	0.62
	Pregnancy Risk	2.83 (2.52)	2.71 (2.24)	(212)	0.180	.857	0.12
	Gestation	38.75(1.49)	38.06(1.70)	(214)	1.361	.175	0.69
	Gestation at 1st Visit	7.56 (4.42)	10.58(3.42)	(199)	-2.556	.011	-3.02
	# Prenatal Visits	13.42(5.25)	12.52(5.06)	(211)	0.597	.551	0.90
	PIPC Communication	4.44 (0.48)	4.07 (0.85)	(208)	1.401	.163	0.36
	Decision Making	3.98 (0.98)	3.45 (1.43)	(211)	1.249	.213	0.52
	Interpersonal Style	4.78 (0.38)	4.57 (0.61)	(192)	1.105	.271	0.22
	QPCQ	4.24 (0.51)	3.96 (0.61)	(184)	1.198	.232	-0.28
	PSS	2.00 (0.98)	2.33 (0.73)	(212)	-1.505	.134	-0.33
PIPC Communication	Age	29.40(7.40)	29.56(5.44)	(212)	-0.062	.950	-0.16
	Education	14.40(3.29)	14.73(3.36)	(203)	-0.214	.831	-0.33
	Parity	0.33 (0.52)	0.85 (1.24)	(213)	-1.014	.312	-0.51
	Pregnancy Risk	4.00 (3.35)	2.68 (2.21)	(212)	1.419	.157	1.32
	Gestation	38.83(1.84)	38.08(1.70)	(214)	1.069	.286	0.75
	Gestation at 1st Visit	10.40(3.65)	10.44(3.52)	(199)	-0.027	.978	-0.04
	# Prenatal Visits	12.67(1.97)	12.57(5.12)	(211)	0.048	.962	0.10
	PIPC Decision Making	3.33 (0.72)	3.49 (1.42)	(211)	-0.186	.852	-0.15
	PIPC Interpersonal	3.79 (1.05)	4.59 (0.58)	(192)	-3.257	.001	-1.11
	Expectations	4.58 (0.40)	4.06 (0.67)	(202)	1.739	.084	0.53
	QPCQ	3.85 (0.49)	3.97 (0.61)	(184)	-0.436	.663	-0.12
	PSS	2.56 (0.59)	2.31 (0.75)	(212)	0.665	.507	0.25
PIPC Decision Making	Age	33.00(2.83)	29.52(5.49)	(212)	0.895	.372	3.48
	Education	17.00(4.24)	14.69(3.35)	(203)	0.968	.334	2.31
	Parity	0.33 (0.58)	0.84 (1.23)	(213)	-0.711	.478	-0.51

Instrument	Variable	*Missing Data* *M (SD)*	*Complete Data* *M (SD)*	*df*	*t*	*p*	*M* Difference
	Pregnancy Risk	5.67 (3.79)	2.68 (2.20)	(212)	2.311	.022	3.00
	Gestation	38.67(2.08)	38.09(1.70)	(214)	0.578	.564	0.57
	Gestation at 1st Visit	12.50(0.50)	10.42(3.51)	(199)	0.831	.407	2.08
	# Prenatal Visits	11.33(1.16)	12.59(5.09)	(211)	-0.425	.671	-1.25
	PIPC Communication	No data					
	PIPC Interpersonal	3.00 (0.00)	4.58 (0.59)	(192)	-2.664	.008	-1.58
	Expectations	4.62 (0.54)	4.06 (0.67)	(202)	1.417	.158	0.55
	QPCQ	3.82 (0.65)	4.68 (0.60)	(184)	-0.432	.666	-0.15
	PSS	3.00 (0.00)	2.31 (0.75)	(212)	0.915	.361	0.69
PIPC Interpersonal	Age	32.05(4.64)	29.27(5.47)	(212)	2.279	.024	2.78
	Education	16.50(4.35)	14.50(3.16)	(203)	2.682	.008	2.00
	Parity	0.77 (1.02)	0.84 (1.25)	(213)	-0.242	.809	-0.07
	Pregnancy Risk	3.24 (2.90)	2.66 (2.17)	(212)	1.114	.266	0.57
	Gestation	38.14(1.58)	38.10(1.72)	(214)	0.100	.920	0.04
	Gestation at 1st Visit	10.45(3.28)	10.44(3.55)	(199)	0.017	.987	0.01
	# Prenatal Visits	13.05(5.38)	12.51(5.03)	(211)	0.467	.641	0.53
	PIPC Communication	3.94 (0.72)	4.11 (0.85)	(208)	-0.855	.393	-0.17
	PIPC Decision Making	2.84 (1.00)	3.55 (1.43)	(211)	-2.170	.031	-0.71
	Expectations	4.62 (0.54)	4.06 (0.67)	(202)	1.407	.158	0.55
	QPCQ	3.68 (0.62)	4.00 (0.60)	(184)	-2.003	.047	-0.31
	PSS	2.23 (0.69)	2.32 (0.76)	(212)	-0.487	.627	0.53
QPCQ	Age	30.53(6.09)	29.39(5.37)	(212)	1.060	.290	1.14
	Education	14.21(3.90)	14.80(3.26)	(203)	-.854	.394	-0.58
	Parity	1.00 (1.44)	0.81 (1.19)	(213)	0.792	.429	0.19
	Pregnancy Risk	3.00 (2.74)	2.68 (2.17)	(212)	0.707	.480	0.32
	Gestation	37.97(1.83)	38.12(1.68)	(214)	-0.468	.640	-0.16
	Gestation at 1st Visit	10.31(4.00)	10.46(3.45)	(199)	-0.210	.834	-0.16
	# Prenatal Visits	12.32(4.05)	12.61(5.21)	(211)	-0.295	.769	-0.30
	PIPC Communication	4.02 (0.61)	4.11 (0.87)	(208)	-0.527	.599	-0.09
	PIPC Decision Making	3.20 (1.15)	3.53 (1.45)	(211)	-1.156	.249	-0.32
	PIPC Interpersonal	4.47 (0.49)	4.59 (0.62)	(192)	-0.866	.387	-0.11
	Expectations	4.15 (0.71)	4.06 (0.67)	(202)	0.631	.529	0.09

Instrument	Variable	Missing Data *M (SD)*	Complete Data *M (SD)*	*df*	*t*	*p*	*M* Difference
PSS	PSS	2.43 (0.82)	2.30 (0.74)	(212)	0.929	.354	0.14
	Age	33.00(2.83)	29.52(5.49)	(212)	0.895	.372	3.48
	Education	17.00(4.24)	14.69(3.35)	(203)	0.968	.334	2.31
	Parity	0.50 (0.70)	0.84 (1.23)	(213)	-0.386	.700	-0.34
	Pregnancy Risk	3.50 (0.71)	2.71 (2.26)	(212)	0.294	.623	0.79
	Gestation	39.50(2.12)	38.09(1.70)	(214)	1.169	.244	1.41
	Gestation at 1st Visit	12.50(4.95)	10.42(3.51)	(199)	0.831	.407	2.08
	# Prenatal Visits	12.00(0.00)	12.57(5.08)	(211)	-0.159	.874	-0.57
	PIPC Communication	No data					
	PIPC Decision Making	No data					
	PIPC Interpersonal	No data					
	Expectations	4.50 (0.71)	4.07 (0.67)	(202)	0.907	.366	0.43
	QPCQ	3.64 (0.81)	3.97 (0.60)	(184)	-0.771	.442	-0.04

Note. *P* (two-tailed); PIPC = Prenatal Interpersonal Processes of Care questionnaire;
QPCQ = Quality of Prenatal Care Questionnaire; PSS = Perceived Stress Scale.

Appendix T

Significant Differences between Means of Variables with Missing and Non-missing Data

Table T
Significant Differences between Means of Variables with Missing and Non-missing data and Effect Size

Variable with Missing Data	Variable	*p*	Eta squared
Satisfaction with Staff Interest	↓ Stress (PSS)	.044	.019
	↓ Gestation at 1st Prenatal Visit	.005	.042
Satisfaction with Information	↑ Parity	.006	.034
Expectations	↓ Gestation at 1st Prenatal Visit	.011	.033
PIPC Communication	↓ PIPC Interpersonal Style	.001	.058
PIPC Decision Making	↓ PIPC Interpersonal Style	.008	.038
	↑ Pregnancy Risk	.022	.025
PIPC Interpersonal Style	↑ Age	.024	.024
	↑ Years of Education	.008	.034
	↓ PIPC Decision Making	.031	.022
	↓ QPCQ	.047	.022

Note. PSS = Perceived Stress Scale; PIPC = Prenatal Interpersonal Processes of Care Instrument; QPCQ = Quality of Prenatal Care Questionnaire.

Appendix U

Antepartum High Risk Pregnancy Scoring

Table U1 *Category 1 Reproductive History*

Reproductive History	Criterion	Score
Age	<16 years	1
	16-34	0
	35	2
Parity	0	1
	1-4	0
	5+	2
Postpartum hemorrhage	yes	1
Baby > 9 lbs	yes	1
Baby < 5 lbs	yes	1
Pre-eclampsia/Hypertension	yes	1
Previous long labour or difficulty delivery	yes	1
Previous Section	yes	2
Stillbirth or neonatal death	yes	3

Table U2

Category II Associated Conditions

Associated Condition	Criterion	Score
Previous gynecological surgery	yes	1
Chronic renal disease	yes	2
Gestational diabetes	yes	1
Diabetes mellitus	yes	3
Heart disease	yes	3
Other medical disorders	yes	(1-3 depending on severity)

Table U3

Category II1 Present Pregnancy

Present Pregnancy	Criterion	Score
Bleeding < 20 weeks	yes	1
Bleeding ≥ 20 weeks	yes	3
Anemia	yes	1
Prolonged pregnancy (42 weeks)	yes	1
Hypertension	yes	2
Premature rupture of membranes	yes	2
Polyhyramnios	yes	2
Small for dates	yes	3
Multiple pregnancy	yes	3

Coopland et al. (1977).