FACTORS ASSOCIATED WITH EFFECTIVE CONTRACEPTIVE USE IN POSTPARTUM ADOLESCENTS

By

Margaret Kozlowski

A Thesis
Submitted to the Faculty of Graduate Studies
In Partial Fulfillment of the Requirements for the Degree of

MASTER OF NURSING

Faculty of Nursing
University of Manitoba
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Abstract

The purpose of this research project was to examine the variables in Pender's (1996) Health Promotion Model for their association with effective contraceptive use by postpartum, parenting adolescents. The incidence of repeat pregnancy among adolescent mothers is between 17 and 40 percent within one year of delivery of the first child. Early repeat pregnancies have been associated with an exacerbation of the negative consequences of teenage childbearing. Questions regarding the variables that may contribute to effective contraceptive use in adolescents have provided the impetus for many research projects but this continues to perplex researchers and caregivers alike.

A convenience sample of 78 parenting adolescents participated in the study between three and twelve months postpartum. Each young woman completed four questionnaires. To measure the dependent variable in the study, the researcher developed the Measure of Effective Contraceptive Use based on measurement methods used in previous research. The Contraceptive Questionnaire, also developed by the researcher and based on research, was used to measure previous experience and problems with contraception, self-efficacy, subject's attitudes toward contraception, perception of partner's and parent's attitudes, and perceptions of advantages and disadvantages of contraception. The Prenatal Psychosocial Profile: Psychosocial Assessment Tool (Curry, Campbell & Christian, 1994) was used to measure stress, social support from partner and others and self-esteem.

Subject's attitudes and perception of partner's attitudes toward contraception were the only two variables that were significantly predictive of effective contraceptive use

when entered into an ordinal regression model. Discussion of the results as they relate to Pender's Health Promotion Model is included. Implications for nursing practice, theory, education and research are discussed.

Dedication

To John, Vanessa and Michael,

whose patience, support and encouragement made this project possible.

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Chapter 1: Statement of the Problem

The incidence of early, repeat pregnancy among adolescent mothers has been reported to be between 17 and 40% within one year following delivery of the first child (Ford, 1983; Polit & Kahn, 1986; Stevens-Simon, Parsons & Montgomery, 1986). O'Sullivan and Jacobsen (1992) reported a 28% repeat pregnancy rate at 18 months postpartum. Thirty to 58% of teenage mothers experience a subsequent pregnancy within two years (Adams, McAnarney, Panzarine & Tuttle, 1990; Covington, Churchill, Wright, Plummer, Cushing & McCorkle, 1991; Stevens-Simon, et al., 1986). The majority of repeat pregnancies in adolescents are unwanted and unplanned (Ford, 1983; Polit & Kahn, 1986; Thompson, Powell, Patterson & Ellerbee, 1995).

The Manitoba, the pregnancy rate for 15-19 year-olds, at 63.2 pregnancies per 1,000 females in this age group, exceeds national levels in Canada of 40.2 per 1,000 by close to 60% (Manitoba Centre for Health Policy and Evaluation, 2001). In Winnipeg, the rates are even slightly higher than the provincial rate at 65.5 per 1,000. Approximately 25% of teen pregnancies end in abortion, so the numbers of adolescents parenting is lower and most of those carrying a pregnancy to term decide to parent their child (Morris, 1997). In Canada, the 1995 birthrate for 15 to 19 year-olds was 24.2 per 1,000 women (Singh & Darroch, 2000). In Manitoba the rate of live births to 15 to 19 year-olds in 1992 was 43.0 per 1,000 females and the rate in Winnipeg was 29.8 per

1,000 (Manitoba Health, 1993). Teen pregnancy and repeat pregnancy thus remain significant concerns locally as well as nationally.

Adolescent females, in general, tend to be unreliable contraceptive users (Glei, 1999; Trussell, Koenig, Stewart & Darroch, 1997) and there is a high risk of discontinuation of contraception once it is obtained (Balassone, 1989; Hewell & Andrews, 1996; Kellinger, 1985). The risk of contraceptive failure is 55% higher in teens than in women older than 20 years of age (Trussell & Vaughan, 1999). The majority of adolescent mothers express the desire to delay their next birth for three to five years (Erickson, 1994; Polit & Kahn, 1986; Stevens-Simon, Kelly & Singer, 1999), and use contraception in the first year after delivery (Erickson, 1994; Ford, 1983). However, ineffective use, method failure and discontinuation remain common in this population (Berenson & Wiemann, 1997; Stevens-Simon, et al., 1999). Indeed, adolescents who have had a previous pregnancy have an even higher likelihood of becoming pregnant again than do teens that have never been pregnant (Mapanga & Andrews, 1995; Polit & Kahn, 1986). Felton (1996) found that adolescents that had ever been pregnant were significantly less likely to use contraception at most recent coitus than adolescents who had never been pregnant.

Adolescent childbearing has been associated with negative biologic, psychologic and socioeconomic outcomes for teenage mothers and their children (Goldfarb, 1997). Fraser, Brockert and Ward (1995) examined the medical records of 134,088 women aged 13 to 24 years who gave birth in Utah. They found that those who were 19 years old or younger had a significantly higher risk of low birth weight, premature or small for gestational age infants. The infants born to teenage mothers have higher health risks and

higher hospitalization costs when compared to those born to women in their twenties (Reichman & Pagnini, 1997). Brooks-Gunn and Furstenberg (1986) reported that the children of adolescent parents are at higher risk for intellectual and behavioral difficulties as they grow and develop. Adolescent mothers tend to be at risk for parenting difficulties and this further places the teens and their children at risk (Spivak & Weitzman, 1987; Thompson, et al., 1995).

Repeat pregnancies in adolescent mothers within one to two years of their first delivery have been associated with an exacerbation of the negative consequences of teenage childbearing. These teens have poorer health outcomes, are less likely to complete high school, are more likely to be unemployed, have less economic stability and rely more on financial aide (Covington, et al., 1991; Ford, 1983; Jones & Mondy, 1994; Mapanga & Andrews, 1995; Polit & Kahn, 1986; Stevens-Simon, et al., 1986; Thompson, et al., 1995).

A first birth to an adolescent mother increases the chance of an early subsequent birth and the negative consequences of teenage childbearing are intensified by closely spaced births. Teens have difficulty using contraceptives effectively and this further places them at risk. It is imperative that we gain knowledge regarding the factors that contribute to effective contraceptive use and therefore, prevention of recidivism (rapid, repeat, unplanned pregnancy) in the adolescent population.

Study Purpose

The purpose of this research project was to examine the variables in Pender's (1996) Health Promotion Model for their association with effective contraceptive use by

postpartum parenting teenagers. This knowledge may guide future interventions that are aimed at assisting teens to delay subsequent pregnancy and therefore improve the outcomes for teenage mothers and their children.

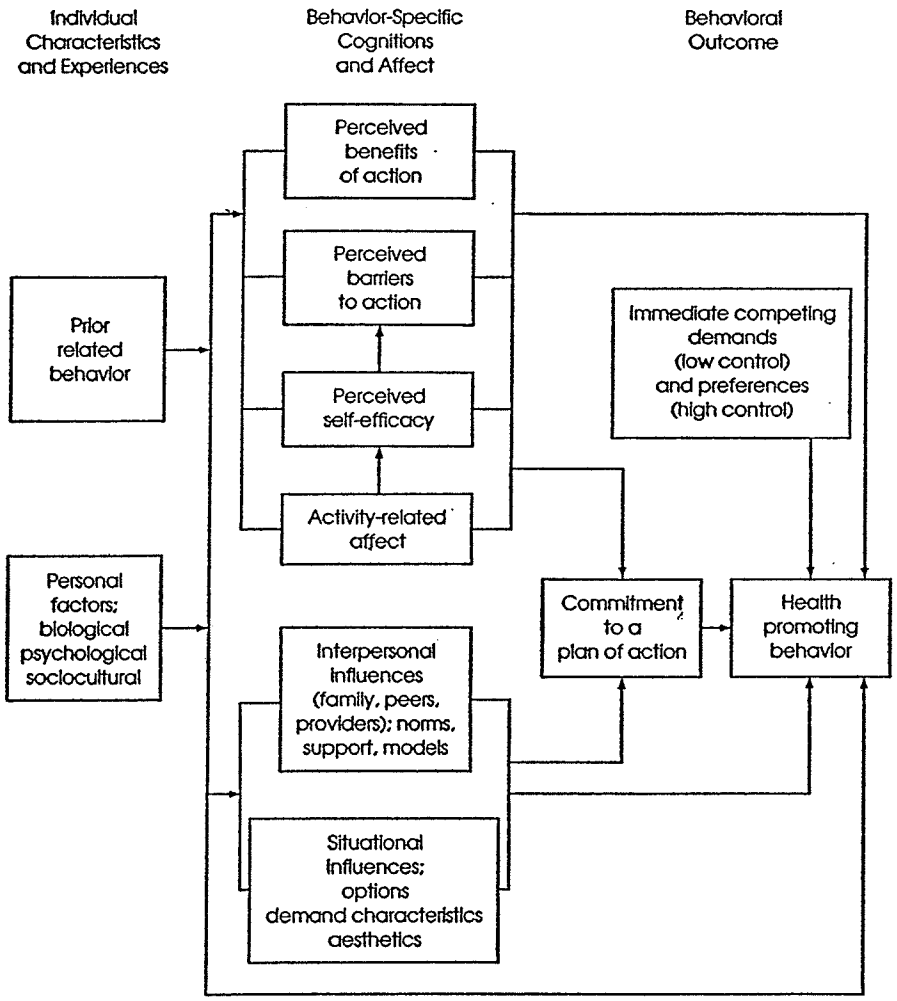
Chapter 2: Conceptual Framework

The Health Promotion Model

Nola Pender's Health Promotion Model (HPM) was originally developed in 1982 with the goal of providing an organizing framework for the prediction and explanation of positive health, or health-promoting behaviors. She conceptualized health as a positive state and not just the absence of illness (Hilton, 1986). Pender viewed health-promotion as directed toward sustaining or increasing an individual's level of well being and the enhancement of health. This optimization of health is distinct from avoidance or prevention of illness or the "health-protecting" behavior for which the Health Belief Model provides an appropriate paradigm (Pender, 1987). The HPM was revised in 1987 and again in 1996 based on research findings that supported or refuted aspects of the previous model.

According to Pender (1996), the HPM (Figure 1) is derived from social cognitive theory which proposes that a "person's expectation of attaining a goal and the value he or she places on it determines the likelihood that a specific behavior will occur" (Klein, 1982, p. 25). This theory holds that "cognition, affect, actions and environmental events are proposed as operating interactively in determining behavior" (Fleury, 1992, p. 233). This is congruent with the HPM's central construct of self-efficacy as well as the concepts of perceived benefits and barriers, activity-related affect and interpersonal and situational influences.

Figure 1: Pender's Health Promotion Model (1996)



The HPM also has theoretical underpinnings in the expectancy-value theory, which contends that human behavior is rational and economical (Pender, 1996). An individual, according to this theory, is unlikely to participate in a behavior that they view as having impossible goals, is not personally valuable to them, and is not likely to result in the desired outcome (Pender, 1996). The constructs in the HPM that are congruent with this theory include perceived benefits, self-efficacy, activity-related affect and prior related behavior.

According to Pender's (1996) Health Promotion Model, "individual characteristics and experiences" and "behavior-specific cognitions and affect" directly and indirectly determine the probability of an individual adopting a particular health-promoting behavior. The Model's variables of behavior-specific cognitions and affect are presented by Pender to be of "major motivational significance" (1996, p. 68) and targets for intervention since it is possible to modify them through nursing actions. The individual's commitment to a plan of action and the influence of immediate competing demands and preferences all have a direct effect on health promotion behavior which is the outcome of the HPM.

Individual characteristics and experiences include "prior related behavior" and "personal factors". Prior behavior refers to whether the individual has participated in a specific health promotion activity in the past. According to the Model, previous use of contraception by an adolescent would increase the likelihood of using it again and would influence the person's perceptions of benefits and barriers to contraception. Therefore experience with a health promotion activity would directly and indirectly influence behavior. Personal factors are proposed to affect the individual's cognitions as well as

directly influencing health promotion behavior and the factors that are relevant vary according to the topic under investigation. The personal factors include biologic factors (e.g. age, gender, physical abilities), psychologic factors (e.g. self-esteem, motivation, perception of health status and definition of health), and sociocultural factors (e.g. ethnicity, education, socioeconomic status) (Pender, 1996).

The **behavior-specific cognitions and affect** include the individual's perceptions of the barriers and benefits to certain health behaviors and are viewed as having positive and negative effects, respectively, on the person participating in that activity. Perceived self-efficacy refers to an individual's belief that they can successfully carry out a specific behavior necessary to produce a specific outcome (Bowsher & Keep, 1995; Pender, 1987). Hence a person who perceives that they are able to successfully carry out an activity aimed at health-promotion and believes that it will actually result in improvement in health status is more likely to participate in that behavior (Gillis, 1993). The model proposes that self-efficacy influences perceived benefits and barriers and is influenced by activity-related affect, which involves the individual's feelings about a particular behavior. When a person has positive feelings or attitudes about an activity they are more likely to participate in or continue with it (Pender, 1996).

Interpersonal influences and situational influences are viewed as directly affecting both the individual's commitment to a plan of action and their participation in health promoting behavior. Interpersonal influences on behavior include the attitudes and beliefs or encouragement of others, social support and learning from others through observation (Pender, 1996). In the adolescent population, the influence of significant others and peers is likely to be a particularly important influence on their health behavior

(Giblin, Poland, & Sachs, 1987). The individual's perceptions of the options available to them and environmental contexts that affect their behavior constitute situational influences.

The **behavioral outcome** of the model includes the individual's "commitment to a plan of action" and the "immediate competing demands and preferences", which are the other behaviors that require the person's attention and energy and are "last minute urges" that one gives in to. Lastly, health-promoting behavior is the outcome of the HPM and is affected both directly and indirectly by all of the other variables of the model.

Study Variables

The Health Promotion Model provided the framework to examine the variables that may be related to effective contraceptive use in adolescent mothers during the first postpartum year. Actual effective use of contraception constitutes the dependent variable in this study and was measured based on self-report by the participants and by the score received on the Measure of Effective Contraceptive Use form.

The independent variables of this study include the following variables related to individual characteristics and experiences and to behavior-specific cognitions and affect:

1. Prior related behavior – participants' self-report of previous contraceptive use and previous problems experienced with contraception.
2. Personal factors – psychological factors examined included self-esteem and stress.
3. Perceived benefits and barriers – participants' perception of the advantages and disadvantages of using contraception.
4. Perceived self-efficacy – participants' reported self-efficacy of using contraception.

5. Activity-related affect – participants' positive or negative attitudes toward contraception.
6. Interpersonal influences – participants' perception of attitudes of significant others and a measure of social support.

Attribute variables consist of the personal biologic and sociocultural factors and were measured with the Demographic Information Form (Appendix A).

Study Questions

The HPM has been utilized in the study of and attempts at prediction of adolescents' health-promoting behaviors such as safety belt use (Riccio-Howe, 1991) and exercise behavior (Garcia, et al., 1995) and some support for the use of this model with adolescents was demonstrated. Only one research study was located that used the HPM to study factors associated with adolescents' ability to use contraception effectively. Felton (1996), in her study of 16 to 19 year-olds, reported that adolescents who used contraception also participated in more health promotion behaviors, had a more positive self-image and were better problem solvers than those who did not use contraception.

Enhancing contraceptive use in adolescents may be viewed as health promotion since a delay in childbearing in never-pregnant teens and a delay in subsequent childbearing in adolescent parents has a positive influence on the health of the teens and their children (College of Family Physicians of Canada, 1993; Hatcher, 1994; Kalmuss & Namerow, 1994; Polit & Kahn, 1986).

To investigate whether the variables of the Health Promotion Model are associated with effective contraceptive use in adolescent parents, the following research questions were addressed:

1. What is the relationship between "individual characteristics and experiences" (previous contraception experience, previous problems, levels of self-esteem and amount of stress), and effective contraceptive use in postpartum adolescents?
2. What is the relationship between "behavior-specific cognitions and affect" (perceptions of advantages and disadvantages, self-efficacy and subject's attitudes about contraception) and actual effective contraceptive use in postpartum adolescents?
3. Are "interpersonal influences" (social supports from partner and others and perception of attitudes of significant others) related to effective contraceptive use in postpartum adolescents?
4. Which independent variables are the strongest predictors of effective contraceptive use in postpartum adolescents?

Chapter 3: Review of the Literature

Adolescent sexuality and contraceptive use have historically been of great interest to researchers and have been the focus of many studies. Questions regarding the variables that contribute to effective contraceptive practices in the adolescent population have provided the impetus for much research but they continue to perplex researchers and caregivers alike. In teenage mothers, the incidence of recidivism is high and although they have been examined in a number of studies, the factors that contribute to prevention of repeat pregnancy remain in question.

Knowledge and Prior Related Behavior

Kellinger (1985) compared a group of pregnant adolescents to never-pregnant adolescents and found no statistically significant difference between the groups on measures of contraceptive knowledge. The generalizability of the study findings is limited by the use of a convenience sample, the lack of attempts to match groups in terms of age and ethnicity and the small sample size. Similar results were found by Marcy, Brown and Danielson (1983) in their comparison of effective and ineffective adolescent users of contraception and no difference in knowledge level surfaced. Namerow, Lawton and Philliber (1987) concluded from their research that accurate knowledge about pregnancy risk does not ensure that adolescents will apply the knowledge by using contraception in their own situation.

A number of studies have examined the relationship between contraceptive knowledge and use in teenage mothers and have found that knowledge levels do not differ significantly between those who experience a repeat pregnancy and those who do not (Adams, et al., 1990; Maynard & Rangarajan, 1994; Polit & Kahn, 1986; Stevens-Simon, Dolgan, Kelly, & Singer, 1997). These findings challenge the previous commonly held assumption that access to contraception, contraceptive education and counseling alone are sufficient to assist teens in avoiding initial or subsequent pregnancies (Polit & Kahn, 1986). Although lack of knowledge about contraception could impede the choice of a method and may be associated with nonuse (Miller, 1986), knowledge clearly is not sufficient to ensure compliance with and continued use of contraception.

No literature was located that identified previous experience with contraception as a variable that had an influence on its actual effective use by teenage or adult women. According to the Health Promotion Model, prior related experience can affect knowledge or "skill information" as well as affecting perceptions and feelings because of experienced benefits or difficulties that result from engaging in a behavior in the past (Pender, 1996). Since, on its own, knowledge from previous experience does not appear to affect contraceptive use, it may affect individual perceptions that may more directly influence this behavior in teens.

Benefits and Barriers of Contraception

Riccio-Howe (1991) found in her study of adolescents' use of safety belts that perceptions of the benefits of and barriers to this health promotion behavior affected the likelihood of actual safety belt usage. Although the use of a convenience sample and the

reliance on self-report may limit the findings, the use of a relatively large sample (n=320) strengthens them and suggests that there is support for perceptions of benefits and barriers affecting health promotion behavior in adolescents.

A number of benefits and barriers to contraception were identified by teens in Kalmuss, Lawton & Namerow's (1987) study. The most frequently mentioned benefits included feeling responsible for their own body and having control over their life while the most common disadvantages included failure of contraception, side effects, discomfort with use and making sex seem like it was too planned and less romantic. Whether the perceptions of these adolescents affected their actual use or nonuse of contraception was not examined in this research.

A few studies have examined adolescents' perceptions of the barriers and benefits of oral contraceptives. Barriers identified include perceptions that there are harmful health effects (Balassone, 1989; Erickson, 1994; Hanna, 1994; Kalmuss, et al., 1987; Kellinger, 1985), that they are ineffective (Kalmuss, et al., 1987), the fear of disapproval by significant others (Erickson, 1994; Hanna, 1994), difficulties with adherence (Balassone, 1989; Hanna, 1997), and the need for medical examination or testing (Balassone, 1989). Perceived benefits of oral contraceptives include pregnancy prevention and feeling like a responsible person (Hanna, 1994; Hanna, 1997). Fear of side effects and potential health risks, concerns about effectiveness, a method's interference with intercourse and negative reactions of their partners constituted the barriers identified by the participants. In her development of a scale to measure adolescents' perceptions of oral contraceptives, Hanna (1997) found that teens did not perceive side effects to be a barrier to adherence to this method. In a few studies,

perceived benefits and barriers to contraception have been demonstrated to have significant influence (in the expected directions) on its actual use by teens (Hellerstedt & Story, 1998; Hiltabiddle, 1996; Kalmuss, et al., 1987).

Self-efficacy

Garcia and colleagues (1995) found support for the hypothesis that high self-efficacy positively influences preteens' (grade five and six) and young teens' (grade eight) health promotion activities in their study of youths' participation in exercise behavior. The use of a convenience sample limits the findings of this study, as does the inclusion of younger teens. The findings therefore cannot be generalized to all adolescents. Several studies that examined self-efficacy as a determinant of health-promoting lifestyles reported findings that support this relationship (McAuley & Jacobsen, 1991; Pender, Walker, Sechrist & Frank-Stromberg, 1990; Weitzel, 1989).

Condom self-efficacy appears to be related to consistency of condom use in sexually active adolescents (Basen-Engquist & Parcel, 1992; Sieving, et al., 1997; Taylor-Seehafer & Rew, 2000). Crosby and colleagues (2001) conversely found that condom self-efficacy in adolescent females was not related to sexual risk behavior. No literature was located that relates contraceptive self-efficacy to effective use of contraceptive methods other than condoms.

Although there is considerable support in the literature for the concept that perceived self-efficacy affects health promotion behaviors; it is not yet possible to say for certain that this would also apply to adolescents and their use of contraception.

Social Support

Findings in the literature indicate that support from others can influence positive health behaviors (Zimmerman & Connor, 1989). Aaronson (1989) found that perceived and received support positively affected pregnant women's abstinence from alcohol, cigarettes and caffeine and they concluded that support contributes to adherence to health behaviors recommended by professionals. A middle-class, relatively homogeneous sample of adult women was used in this study so the generalizability of the findings to a less advantaged, more ethnically diverse or adolescent group of women is questionable.

In pregnant adolescents, Gillmore, Butler, Lohr, and Gilchrist (1992) found a negative association between family closeness and sexual risk-taking. Giblin and colleagues (1987) found that positive relationships between adolescents and their partners were correlated with adequate levels of prenatal care and health seeking behaviors.

Studies that have attempted to relate contraceptive use with social support in adolescent mothers show mixed results. Gispert, Brinich, Wheeler and Krieger (1984) found that adolescents who had had a previous pregnancy and had good relationships with their mothers were less likely to have a repeat pregnancy during the two-year follow-up period. Berenson and Wieman (1997) found similar associations in their study of adolescent mothers in the first six months postpartum. They found that adequate social support strongly predicted contraceptive compliance in their sample. The use of a self-report survey and a 22% attrition rate at follow-up limit the findings but the use of a relatively large sample of 359 sexually active teens strengthens the results. Adams and colleagues (1990) found that adolescent mothers with repeat pregnancies perceived their own mothers to be more supportive than did nonrepeaters. They concluded that positive

maternal support did not contribute to the prevention of repeat pregnancy. The small sample size in this study limits the ability to generalize the findings to other adolescent mothers. Mapanga and Andrews (1995) also used a relatively small sample of teenage mothers and they similarly found that emotional support from family and friends did not have a positive effect on contraceptive practice.

Attitudes of Significant Others

There is evidence in the literature that support and encouragement from significant others can influence positive health behavior changes (Zimmerman & Connor, 1989). Partner's attitude and expectations have been found to influence adolescent women's contraceptive use and the decision to use contraception is often a joint decision between the young woman and her partner (Maxwell, Bastani, & Yan, 1995; Nadelson, Notman & Gillon, 1980). Miller (1986) concluded in his study of married women that if the woman's partner has a negative attitude toward contraception or disapproves of the contraceptive method they are using, nonuse is more frequent. Conversely, Zabin, Astone, and Emerson (1993) concluded that partner's wishes did not impact contraceptive behavior of female adolescents.

Only one study was located in the literature that examined parental attitudes and their relationship with effective contraceptive use in adolescents. Jaccard and Dittus (2000) did not find an association between positive maternal attitudes and adolescent's use of contraception. Hacker, Amare, Strunk, and Horst (2000) reported that teens that used contraception also were having frequent conversations with their parents about contraception. This finding may suggest that parental attitudes have an influence on contraceptive use, but more research in this area is necessary.

Self-esteem

A number of studies have investigated whether there is a difference in levels of self-esteem between pregnant and non-pregnant adolescents. They have shown some consistency in their findings that self-esteem does not differ significantly when pregnant and non-pregnant teens are compared (Connelly, 1998; Medora, Goldstein, & von der Hellen, 1994; Morgan, Chapar, & Fisher, 1995; Robinson, & Frank, 1994; Vernon, Green, & Frothingham, 1983). Kellinger (1985) found similar results in her comparison of never-pregnant contraceptive users and pregnant adolescents. No statistically significant difference was found on the measures of self-esteem.

In their 1987 study of sexually active adolescents, Kalmuss and colleagues found that higher levels of self-esteem were related to teenager's increased perceptions of the advantages and reduced perceptions of the disadvantages of contraception. Thus, teens with higher self-esteem may be more likely to use contraception effectively because of their perceptions that tend to favor contraception. In a study of high-risk youth, Kowaleski-Jones and Mott (1998) found a link between female adolescents' early initiation of intercourse and nonuse of contraception and low self-esteem. Adolescents' self-esteem and the possible associations with contraceptive use has not been fully explored by researchers interested in factors that may contribute to effective contraception in this population.

Stress

Life stress has been found by Tilden (1983) to exert a significant effect on emotional disequilibrium during pregnancy. In a study of the association between family structure and the risk of a premarital birth (Wu & Martinson, 1993), support was found

for the hypothesis that a premarital birth may be a response to the stresses resulting from instability in a woman's family situation. On the other hand, Morgan, Chapar, and Fisher (1995) compared pregnant or previously pregnant teens to never-pregnant teens and found that there was no significant difference in the experience of stressful life events between the two groups. The use of convenience samples (Morgan, et al.; Tilden) and a retrospective design (Wu & Martinson) limit these studies. No literature was located that specifically associates adolescents' stress levels with their use of contraception.

Activity-related Affect

Zabin, Astone and Emerson (1993) examined adolescents' feelings about contraception in their longitudinal study and found that those who were committed to prevent pregnancy and had a positive attitude toward birth control were significantly more likely to use it. Those with negative attitudes were less likely to be effective contraceptive users. The use of a homogeneous sample of economically and socially disadvantaged respondents, however, limits the ability to generalize the findings. Jones and Mondy (1994) similarly suggested that adolescents' feeling that a contraceptive method was acceptable and compatible were important issues in delaying subsequent pregnancies. Teenagers who have more negative feelings about contraception may have a lower tolerance for side effects and may be more likely to discontinue using it (Balassone, 1989). Among married adult women studied by Miller (1986) a negative attitude toward their contraceptive method or contraception in general was associated with failure to use it. Silverman, Torres and Darroch Forrest (1987) similarly found that adult women who failed to use contraceptive methods effectively shared negative attitudes about them. Conversely, Gispert and colleagues (1984) and Jaccard and

colleagues (1990) found that adolescent mothers' attitudes toward contraception did not predict its actual use.

In summary, researchers have examined many of the variables of the Health Promotion Model and some have been shown to have an influence on health promotion behaviors. Previous research has demonstrated that adolescent' perceptions of benefits and barriers of contraception influence its actual use. Self-efficacy, self-esteem and stress have not been adequately researched and conclusions cannot be drawn as to whether they influence contraceptive use in this population. Studies that examine social support and feelings about contraception show mixed results regarding whether or not they affect contraceptive use. These variables were examined in a sample of adolescent mothers to determine if they are related to actual contraceptive use during the first year following delivery.

Chapter 4: Methodology

This chapter describes the design and methodology that were used for this study. A quantitative approach was employed to answer the research questions. A description of the sample, setting, instruments, procedures, data collection and analysis methods will be discussed.

Research Design

A descriptive correlational design was used in this research study. The intent of this type of design is not to imply causation, but to identify relationships between variables without manipulation and as they exist in a situation (Burns & Grove, 1993). A correlational design is an efficient and effective method for collecting a large amount of data and for discovering many interrelationships in a short amount of time (Polit & Hungler, 1995). The variables of interest in this study must be measured as they exist since it is not possible to manipulate them. These variables include prior related behavior, personal factors of self-esteem and stress, the individual's perceptions of advantages, disadvantages and self-efficacy, subjects' attitudes about contraception, perception of the attitudes of others, and social support received from the subject's partner and from others.

Study Sample

Participants for this study were recruited from the Women's Hospital at the Health Sciences Centre and the St. Boniface General Hospital, the two tertiary care hospitals in Winnipeg, Manitoba. A convenience sample was drawn from adolescents

who delivered their infants at these two hospitals or from adolescent mothers attending the Women's Hospital Ambulatory Care Department for postpartum care during the time period of the study. Convenience samples are appropriate for exploring and examining relationships about which little is known and to describe relationships between variables (Burns & Grove, 1993).

In this type of sample, multiple biases may exist because the subjects may not be typical of the general population of interest (Burns & Grove, 1993; Polit & Hungler, 1995). In order to reduce the likelihood of sampling bias, the researcher originally planned to recruit a relatively large sample of 100 participants. After 19 months of data collection, 127 adolescent mothers had agreed to participate and 78 actually participated (attrition rate of 38.6%).

Adolescent mothers were approached on the postpartum ward following delivery and the researcher requested permission to contact them in three months time. Postpartum teens were also approached in the Ambulatory Care Clinic at the Women's Hospital and asked to participate. The age range of 15 to 19 years was chosen because this is a common range used in research with adolescents and in collection of statistical data describing pregnancy and fertility rates. Teens who were parenting their child were selected to control for potential differences in participants' desire for subsequent pregnancy and attitudes toward having another pregnancy or toward contraception. Teens wishing to become pregnant within the first postpartum year were excluded since this desire may have influenced their contraceptive use and possibly their responses to questions that measured the independent variables. The collection of data three or more

months postpartum provides information about the outcome variable during the first year. Collecting it earlier may not have been indicative of actual longer-term use.

Criteria for eligibility to participate in the study included:

1. Between the ages of 15 and 19 years.
2. Had given birth to a baby in the past 3 to 12 months.
3. Parenting her child.
4. Ability to speak English.
5. Not desiring another pregnancy during the next year.

Study Setting

Postpartum adolescents were recruited from the postpartum units of the Health Sciences Center Women's Hospital and the St. Boniface General Hospital, the two tertiary-care centers in Winnipeg, Manitoba. Participants were also recruited from the Ambulatory Care Department of the Women's Hospital, which has clinics that provide antenatal and postpartum care to adolescents. Data were collected in the Ambulatory Care, in the subject's home, or in another location convenient for the participant.

Instrumentation

Data for this study were collected using the Demographic Data Collection Form found in Appendix A, the Contraceptive Questionnaire (Appendix B), the Prenatal Psychosocial Profile (Appendix C), and the Measure of Effective Contraceptive Use (Appendix D).

Demographic Data Collection Form

This form collects demographic information about the participants such as age, parity, date of delivery, cultural group and religion. The form also addresses with whom participants reside, school attendance, grade completed at school and financial support. Subjects' desire to avoid a subsequent pregnancy is introduced with the question "When do you want to have your next pregnancy?"

Contraceptive Questionnaire

The Contraceptive Questionnaire was developed by the researcher to measure several of the variables under study. Prior experience and problems with contraception, subjects' perceptions of self-efficacy, subjects' attitudes toward contraception, subjects' perception of significant others' attitudes about contraception, and subjects' perception of benefits and barriers (advantages and disadvantages) of contraception are all addressed. The questions are based on those previously used in other research studies that focused on contraception in adolescents and on the findings of such research projects.

Previous Experience and Problems with Contraception

The first three questions of the Contraceptive Questionnaire are designed to gather information about respondents' previous experience and problems with contraception. The number of different methods the subject used in the past constitutes the experience score and the number of previous problems with contraception reported constitutes the problem score. These questions result in ordinal type data.

Self-Efficacy

Questions B4 and B5 ask how effectively participants feel they would be able to use contraception. These are intended to measure their perceptions of self-efficacy

related to contraception. They are scored on two scales that range from 'very effectively' to 'very poorly' and 'very well' to 'very poorly' and result in ordinal data. Both of these questions must be reverse scored for high scores to indicate higher self-efficacy.

Adding the number of "very effectively" and "fairly effectively" responses in question B4 (possible score 0 to 7) plus the maximum effectiveness score (score 0 to 4 that is the highest score of the responses given) plus the score for question B5 (score 1 to 4) is how the self-efficacy score is computed. The resulting score out of a possible of 15 points provides ordinal level data.

Subject's Attitudes, Perception of Partner and Parent's Attitudes

Question B6 measures the subjects' attitudes and their perception of their significant others' attitudes toward contraception. There are four questions (items a to d) that address the respondent's attitudes and five that address perceptions of partner and parental attitudes (items e to i). All of these items are adopted from research undertaken by Jaccard, Wan, Helbig, Gutman and Kritz-Silverstein (1990) and Zabin and colleagues (1993). These questions are scored on a five-point scale ranging from 'strongly agree' to 'strongly disagree' and result in ordinal level data. Items g) and h) must be reverse scored so that high scores indicate more positive attitudes toward contraception. Jaccard and colleagues (1990) reported a correlation of .81 between the questions asked in items e) and f). In this study, these two items had a correlation of .6811.

Perceptions of Advantages and Disadvantages of Contraception

In the final two sections of the questionnaire, participants' perceptions of advantages and of disadvantages to contraceptive use are measured by asking subjects to score each item on a five-point scale according to whether they think the item is not true

(0), not a (dis)advantage (1), a small (dis)advantage (2), a big (dis)advantage (3), or a huge (dis)advantage (4). The items included in these sections are based on the findings of research that examined these perceptions (Ballasone, 1989; Hanna, 1994; Hanna, 1997; Kalmuss et al., 1987). Kalmuss and colleagues found that 95% of their 425 respondents felt that feeling more responsible for one's own body and prevention of pregnancy were advantages of contraceptive use and control over one's life was viewed as advantageous by a majority of subjects. They also found that the most frequently identified disadvantage was the possibility of contraceptive failure (>50%). Side effects, health risks, discomfort of use and reduced romance were all identified as disadvantages by one quarter to two-fifths of respondents. The authors described the reliability coefficients of .57 for the advantages of birth control scale and .54 for the disadvantage scale as moderate.

The items in the advantages and disadvantages scales are all scored ranging from zero for 'not true' to four for 'a huge advantage' or 'a huge disadvantage'. High scores indicate higher perceptions of advantages and disadvantages of contraception in both of the scales and result in ordinal level data.

The Contraceptive Questionnaire measures many variables: previous experience and previous problems with contraception, self-efficacy, subject's attitudes, perception of partner and parent's attitudes toward contraception and perception of advantages and disadvantages of contraception. The questions included are adapted from the research literature. A group of five adolescent women served as a pretest panel for this questionnaire to confirm that the scale was clear and understandable and to discover the

amount of time required to complete it. No changes were required since the pretest panel had no difficulty in understanding the questions and the researcher found it easy to administer. The Contraceptive Questionnaire took between 10 and 15 minutes to complete.

Prenatal Psychosocial Profile: Psychosocial Assessment Tool

The Prenatal Psychological Profile (PPP) is a 44-item instrument that uses Likert-type scales and was used to measure the variables of stress, social support and self-esteem (Curry, 1990, 1998; Curry, Burton, & Fields, 1998; Curry, Campbell, & Christian, 1994). There are four subscales: an assessment of stress, support from others, support from partner and self-esteem, each consisting of 11 items. Written permission to use the PPP was obtained from Ms. Curry (Appendix I).

The first component consists of items that ask women to rate, on a four-point scale, the extent to which each is a current stressor or hassle for them, resulting in a score out of 44 points. The second section asks women how satisfied they are with the amount of support they receive from their partner and from other people. Each of these items are each scored on a six-point scale with 1 = "very dissatisfied" and 6 = "very satisfied" and result in a score out of 66. The third section measures self-esteem on a four-point scale and asks women to rate how much they agree or disagree that each of the statements describe themselves.

The PPP was designed as a psychosocial assessment tool to be used with pregnant women. No literature was located that used this tool in a sample of postpartum women. However, there is only one item that refers specifically to a current pregnancy (**C1F**: to what extent is your "Current pregnancy" a stressor/hassle?) and this item is rewritten as

"Your Young Baby" to make it applicable to women following delivery. This change was made on the advice of Dr. Lorraine Walker (University of Texas at Austin, School of Nursing) who has used the stress scale in unpublished research with postpartum women (personal communication, September, 1999).

The PPP results in ordinal type data, takes 5 to 15 minutes to complete and is easy to administer and score. The stress and support scales are scored as written and higher scores indicate higher levels of stress and support. Six of the items on the self-esteem scale (**C3A**, **C3B**, **C3D**, **C3F**, **C3G**, and **C3K**) are reverse scored so higher scores will indicate higher self-esteem.

The PPP has been used in a number of studies and its validity and reliability have been supported. Curry (1998) evaluated internal consistency of the subscales reliabilities and found Cronbach's alphas for support and self-esteem greater than .70 and for the stress scale from .67 to .78. Alphas for all subscales exceeded .70 in a 1994 study (Curry, et al.). Test-retest reliability correlations for the subscales ranged from .78 to .84, indicating that the scales were relatively stable over time.

Curry and colleagues (1994) found evidence for construct validity of the PPP. Similarly, in 1998, Curry found that the subscales correlated with one another in the expected directions as described in the literature and this further supported construct validity of the scale. Convergent validity for the PPP stress scale was supported by a correlation of .71 with the Difficult Life Circumstances Scale (Curry, et al., 1994).

Measure of Effective Contraceptive Use

A three-item questionnaire was used to measure the effectiveness of respondents' contraceptive use. This questionnaire is based on the measures used in studies of contraceptive use found in the literature.

Zabin, Astone and Emerson (1993) defined an "effective contraceptor" as a person who uses an effective method all or most of the time and used an effective method at last intercourse. Berenson and Wiemann (1997) defined reliable contraceptive use as the use of levonorgestrel implants, depot-medroxyprogesterone acetate (Depo Provera), an I.U.C.D, a condom or oral contraceptives (if not missing pills) at last intercourse. Questions D1 and D3 are based on these definitions and each question results in a score out of two.

Jaccard and colleagues (1990) used a proportion measure to assess consistency of contraceptive use. In question D2, the proportion of times the respondent engaged in unprotected intercourse in relation to the total number of times they had intercourse results in a percentage that can easily be scored. The scoring of this question is identical to that used by Jaccard and the resulting score on this question ranges from 1 to 6. Jaccard found that, when the consistency scores for women who became pregnant were compared to those of women who did not, a statistically significant difference between groups was observed in the expected direction. They found a high test-retest correlation of .96, which suggests reliability of their measure of consistent contraceptive use, on which question D2 is based.

Adding the score on question D1 plus the score on D2 plus the score on D3 results in a score out of 10 possible points for the Measure of Effective Contraceptive Use. This

score results in ordinal level data. Higher scores on this scale indicate more effective contraceptive use.

Since this measure involves self-report, there is concern about its validity. Respondents may not be willing to admit ineffective contraceptive use for social desirability reasons and this can lead to response bias (Polit & Hungler, 1995; Santelli, Lindberg, Abma, McNeely, & Resnick, 2000). However, because of the personal nature of the information required, it would be impossible to gather it by other methods. In order to minimize socially desirable response tendencies, the researcher reassured the respondents of the anonymity of their responses, established a good rapport with the participants, approached them in a non-judgmental manner, and stressed the importance of honest responses.

Procedure

The investigator met with the unit managers and nurses of the Women's Hospital Ambulatory Care Department and postpartum units of the Women's Hospital and the St. Boniface General Hospital to explain the research project, answer questions and request assistance with identifying potential participants. One to one communication and small group sessions were held at each site to provide nurses with information about the study, its inclusion criteria and procedures involved.

In each setting, the researcher asked nursing staff to identify potential participants who met the inclusion criteria for the study. The nurse was asked to approach these young women to advise them that a nursing study examining the experience of postpartum contraception in young mothers was being conducted and to request

permission for the researcher to explain the study to them (Appendix E). They were advised that they were potential participants and that the nurse researcher would be pleased to explain the study to them if they were interested. For those adolescents who agreed to be approached on the postpartum ward, the researcher explained the study and asked permission to contact them at three or more months postpartum to again request their participation.

The researcher met with those potential subjects who agreed to learn more about the study and it was explained to them both verbally and in writing (Appendix F). Immediately prior to data collection, the consent form (Appendix G) was carefully reviewed and if the young woman agreed to participate, her signature on the consent form was obtained. Each participant was provided with a copy of the study explanation (Invitation to Participate, Appendix F), and their signed consent form.

The researcher then completed the Demographic Data Collection Form, the Contraceptive Questionnaire, the Psychosocial Assessment Tool, and the Measure of Effective Contraceptive Use with the respondent. To avoid problems with data collection related to participants' reading ability, the researcher administered all tools verbally and recorded the data on the data collection forms. This contact with the participant was the only point of data collection. Participation in the study took approximately 20 to 30 minutes of the participant's time.

Ethical Considerations

Ethical approval was obtained from the Ethical Review Committee of the Faculty of Nursing at the University of Manitoba (Appendix H). Facility access to the Women's

Hospital, Health Sciences Center and the St. Boniface General Hospital was sought and approved prior to beginning recruitment and data collection (Appendix J).

Participants were provided with information about the purpose and nature of the study before agreeing to become involved. The study was explained to all participants both verbally and in writing (Appendix F). The researcher ensured that all participants understood that their participation was voluntary and their care would not be affected if they decided not to participate, decided to withdraw after agreeing to participate, or decided to refuse to answer any of the questions. Informed consent was obtained and each participant was given a copy of the signed consent form (Appendix G). Subjects were made aware that they could have a copy of the study results sent to them if they wished (Appendix G).

Ensuring that participants were not identifiable, in any way, protected their anonymity. The questionnaires were identified only with a subject number and no subject names were used. The researcher abided at all times with the institutions' confidentiality policies in accordance with the Personal Health Information Act. The raw data from the study will be stored for seven years in a locked filing cabinet and then destroyed. Only the researcher, thesis committee and statistician had access to the data and the researcher ensured that there was no unauthorized access to information.

The respondents in this study were adolescents aged 15 to 19 years. Since many of them were minors, special attention was required to protect their rights when discussing informed consent to participate in research (International Council of Nurses, 1996). According to Burns and Grove (1993), "autonomous individuals, who are capable of understanding and weighing the benefits and risks of a proposed study, are competent

to give consent" (p. 107). Subjects in this study were well informed of the study procedure and what participation entailed so they were able to weigh risks and benefits prior to agreeing to participate. Many of the participants were drawn from patients that attend ambulatory clinics and receive medical care without requiring parental consent and therefore they could be considered competent to consent to participate.

Adolescents may be considered vulnerable subjects because of their age but in this study the risk/benefit ratio was low, so studying them is acceptable (Polit & Hungler, 1995). The participants in this research received no direct benefit from their participation but the information obtained has the potential to benefit the care of adolescent mothers in the future. Since there was no intervention, the only cost to participants was their time and the potential risk was minimal. However, questions about private matters such as sexual behavior can arouse anxiety and embarrassment in adolescents (Melton, 1989). To reduce this risk, subjects were approached in a non-judgmental manner, confidentiality was assured and they were aware that they could refuse to answer any question. If subjects experienced any problems or difficulties as a result of answering the questions, the researcher referred to the appropriate health care professional for follow-up care. The final two questions on the questionnaire were added to ensure that the researcher responded to potential difficulties. Six subjects stated that the interview brought up concerns or questions they wanted to discuss with their health care provider. Three of these young women requested that the researcher approach their health care provider for them. The subjects' concerns involved questions about postpartum depression and self-esteem. In all three cases, as requested by the participant, the researcher initiated immediate referral to their health care provider.

In the case of disclosure of abuse by a participant, the researcher would have been obligated to refer to appropriate authorities and health care providers and the subjects were be made aware of this prior to commencement of data collection. This information was also included in the consent form to ensure that participants were aware of this obligation. No participants disclosed that they or their infants were victims of abuse.

Data Analysis

The study results were scored; the data coded and entered in SPSS 10.0 (1999), a data analysis software package. Descriptive statistics, including frequency distributions, measures of central tendency, and variability, were used to summarize the demographics of the study sample. Measurement tools for each of the variables were scored and results were examined using descriptive statistics. A summary of the measurement tools is found in Table 1.

Research Question One; "What is the relationship between individual characteristics and experiences (previous contraceptive experiences, previous problems with contraception, levels of self-esteem and amount of stress) and effective contraceptive use in postpartum adolescents?" was then examined. Sections of the Contraceptive Questionnaire and the Psychosocial Assessment Tool were used for this purpose.

Research Question Two; "What is the relationship between behavior-specific cognitions and affect (perceptions of advantages and disadvantages, self-efficacy and attitudes about contraception) and actual effective contraceptive use in postpartum adolescents?" was explored through the use of items on the Contraceptive Questionnaire.

Research Question Three; "Are interpersonal influences (social supports from partner and others, attitudes of significant others) related to effective contraceptive use in postpartum adolescents?" was addressed using the social support section of the Psychosocial Assessment Tool and one item on the Contraceptive Questionnaire.

A correlation matrix was constructed for each of the first three questions to examine the correlations for each set of variables. Since distributions were not normal and all variables were measured on an ordinal scale, Spearman's rho (r_s) was used to construct the matrices. A .05 level of significance was used. Each question was examined using ordinal regression, which is an appropriate procedure when both the dependent and independent variables are ordinal in nature (Armstrong & Sloan, 1989). With this method of analysis, one can build models that generate predictions and measure the effect of the predictor variables on the outcome variable (Scott, Goldberg & Mayo, 1997).

Finally, Research Question Four; "Which independent variables are the strongest predictors of effective contraceptive use in postpartum adolescents?" was examined. The variables that emerged as significant in the correlation matrices and ordinal regression procedures were put into an ordinal regression analysis in an attempt to build a model and to evaluate their importance as predictor variables for effective contraceptive use.

Table 1: Measurement of Variables

MEASUREMENT APPROACH	VARIABLE	DATA TYPE	RANGE
MEASURE OF EFFECTIVE CONTRACEPTIVE USE	EFFECTIVE CONTRACEPTIVE USE	ORDINAL	0-10
CONTRACEPTIVE QUESTIONNAIRE *(B2)*	PREVIOUS EXPERIENCE WITH CONTRACEPTION	ORDINAL	0-7
CONTRACEPTIVE QUESTIONNAIRE *(B3)*	PREVIOUS PROBLEMS WITH CONTRACEPTION	ORDINAL	0-7
CONTRACEPTIVE QUESTIONNAIRE *(B4 & B5)*	SELF-EFFICACY	ORDINAL	1-15
CONTRACEPTIVE QUESTIONNAIRE *(B6; A -D)*	SUBJECT'S ATTITUDE TOWARD CONTRACEPTION	ORDINAL	3-15
CONTRACEPTIVE QUESTIONNAIRE *(B6; E-H)*	PERCEPTION OF PARTNER'S ATTITUDE TOWARD CONTRACEPTION	ORDINAL	3-15
CONTRACEPTIVE QUESTIONNAIRE *(B6; I)*	PERCEPTION OF PARENT'S ATTITUDE TOWARD CONTRACEPTION	ORDINAL	1-5
CONTRACEPTIVE QUESTIONNAIRE *(B7)*	PERCEPTION OF ADVANTAGES OF CONTRACEPTION	ORDINAL	0-28
CONTRACEPTIVE QUESIONNAIRE *B8)*	PERCEPTION OF DISADVANTAGES OF CONTRACEPTION	ORDINAL	0-28
PSYCHOSOCIAL ASSESSMENT TOOL	STRESS	ORDINAL	11-44
PSYCHOSOCIAL ASSESSMENT TOOL	SATISFACTION WITH SUPPORT FROM PARTNER	ORDINAL	11-66
PSYCHOSOCIAL ASSESSMENT TOOL	SATISFACTION WITH SUPPORT FROM OTHER PEOPLE	ORDINAL	11-66
PSYCHOSOCIAL ASSESSMENT TOOL	SELF-ESTEEM	ORDINAL	11-44

Chapter 5: Results

Data collection occurred over a period of 19 months from February 2000 to September 2001. Seventy-eight adolescent mothers participated, 48 were recruited from the Women's Hospital Ambulatory Care, 19 and 11 were recruited from the postpartum units of Women's Hospital and St. Boniface General Hospital respectively. Data collection took place in the Women's Hospital Ambulatory Care for 38 subjects, in the participant's home for 37 subjects, and in other locations for three subjects.

This chapter describes the results of the data collection, demographic information, and subsequent data analysis. Results from each of the measurement tools also will be presented. Data analysis focuses on the examination of each of the four research questions.

The Sample

Subjects ranged in age from 15 to 19 years (mean 17.3 years) with a mean education level of grade 9.5 (range grade 6 to 2 years postsecondary education). At the time of data collection, 47 (60.3%) were attending school. Forty-four (56.4%) adolescents were Aboriginal or Métis, 24 (30.8%) Caucasian, five (6.4%) European, and the remaining five identified themselves as Afro-Canadian, Asian or other. Forty-six (59.0%) stated that they followed no religion; 15 (19.2%) identified themselves as Protestant, 12 (15.4%) were Catholic, and the remaining five participants were Jewish, Buddhist or other.

Twenty-one of the adolescents approached by nurses did not agree to speak to the researcher about the study. A total of 79 adolescent mothers still in hospital following delivery agreed to be contacted after three months to participate and only 30 (38%) of them actually participated. Three of the potential participants, when contacted after three months, changed their minds and subsequently decided not to participate. Forty-six potential subjects were lost to follow-up three or more months following discharge from hospital (phone not in service, moved with no forwarding address, etc.). The resulting final sample size was 78 participants.

The participants ranged between 11.9 and 50.6 weeks since delivery at the time of data collection with a mean of 23.6 weeks. All participants were parenting their most recent infant. Seventy-two participants (92.3%) were parenting one child, five (6.4%) were parenting two children and one had three children. Sixty (76.9%) had experienced only the one pregnancy, 16 (20.5%) had two pregnancies, and the other two had had three and five pregnancies. Six adolescents (7.7%) had a repeat pregnancy since the delivery of their child. Seven (9.0%) young women stated that they never wanted to become pregnant again, 62 (79.5%) wanted to become pregnant again in two or more years and the remaining nine (11.6%) desired their next pregnancy within two years.

Effective Contraceptive Use

The dependent variable in this study, effective contraceptive use, was measured using the Measure of Effective Contraceptive Use questionnaire. Total scores encompassed the entire range of the scale, from 0 to 10 (mean 7.95; SD 2.88; median 9; mode 10) and are presented in Table 2.

Table 2: Measure of Effective Contraceptive Use Scores

	Score	Frequency	Percent
Low Effectiveness	0-6	17	21.8%
Moderate Effectiveness	7-8	16	20.5%
High Effectiveness	9-10	45	57.7%

Fifty-eight (74.4%) of the respondents reported that they had used a method of contraception the last time they had intercourse and 20 (25.6%) reported they had not. The number of times subjects reported having intercourse in the previous month ranged from 0 to 50 with a mean of 7.27 (SD 2.88). Of the 59 subjects who reported having intercourse at least once during the previous month, 41 (69.5%) reported using contraception all of the time and five (8.5%) reported contraceptive use none of the time. The contraceptive methods respondents reported using are reported in Table 3.

Reliability analysis for the Measure of Effective Contraceptive Use scale indicated correlations between the three item scores ranged from .3223 to .5639 and the scale reliability resulted in an alpha of .6860. This is an acceptable level of reliability for a scale that has not yet been tested and that was developed by the researcher.

Table 3: Contraceptive Method Subjects Currently Using

	Frequency	Percent
None	7	9.0
Abstinence	5	6.4
Oral Contraceptives	12	15.4
Depo Provera	32	41.0
Condoms/Spermicide	22	28.2
TOTAL	78	100.0%

Forty-one percent of the respondents were using Depo Provera for contraception. To test if the mean contraceptive score differs significantly between those who are using Depo Provera and those who are using other methods of contraception, a simple t-test was used (Table 4). The results of the t-test indicate that the mean contraceptive scores of the two groups differ significantly ($p < .001$).

Table 4: T-Test: Mean Contraceptive Scores: Using Depo Provera vs. Using Other Methods

Group Statistics:

	N	Mean	Standard Deviation	Standard Error
Not Using Depo	46	6.85	3.25	.48
Using Depo	32	9.53	.98	.17

Independent Samples Test:

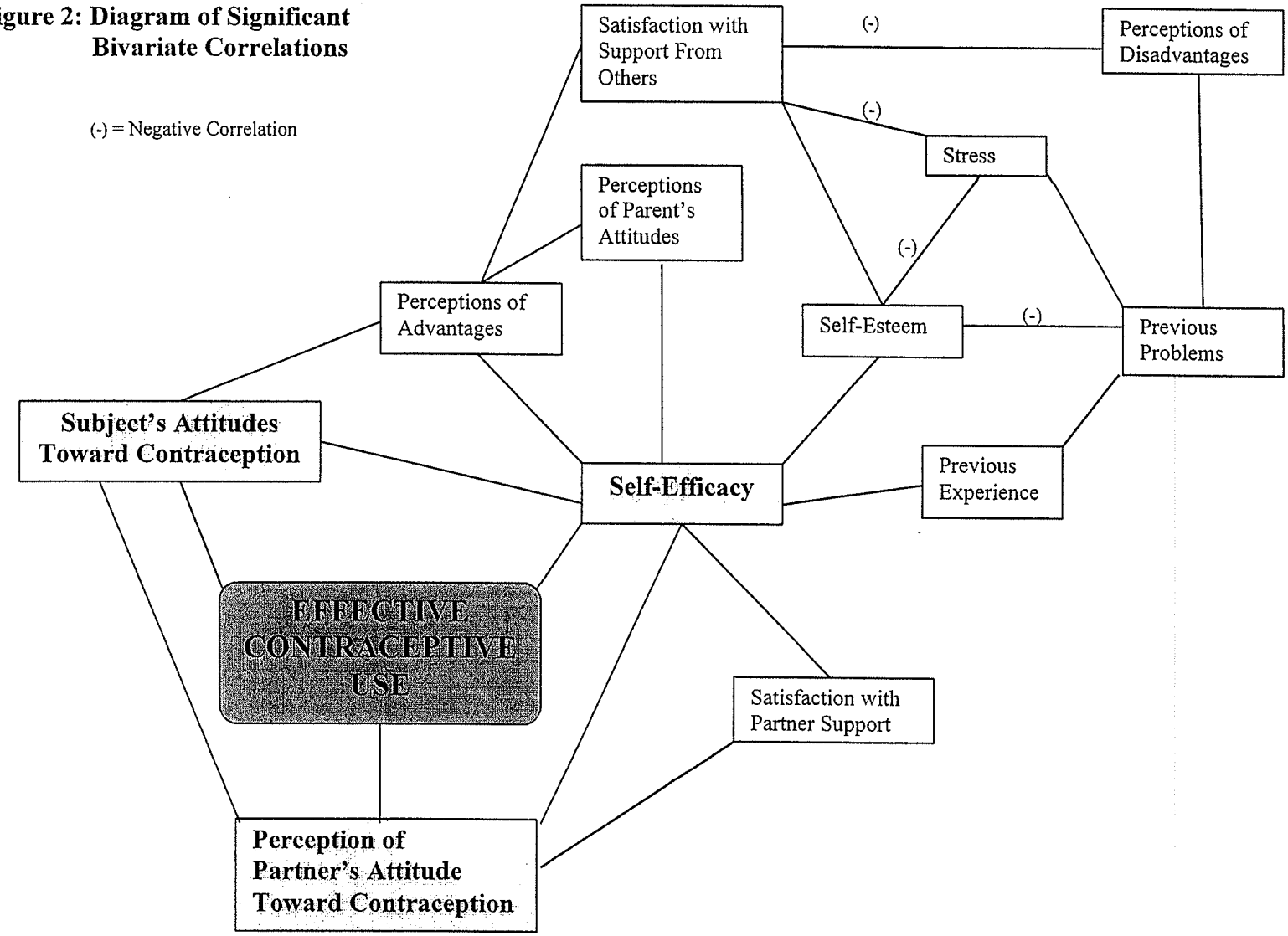
	t-Value	df	Significance (2-tailed)
Equal Variances Assumed	-4.527	76	.000
Equal Variances Not Assumed	-5.271	56.238	.000

Significant Bivariate Correlations

The relationships between the variables in this study were examined using Spearman's rho. Subject's attitudes toward contraception, perception of partner's attitude toward contraception and self-efficacy were all related to effective contraceptive use. Many of the other independent variables were related to one another. These correlations are demonstrated in Figure 2.

Figure 2: Diagram of Significant Bivariate Correlations

(-) = Negative Correlation



Research Question One

The first research question was "What is the relationship between individual characteristics and experiences (previous experience with contraception, previous problems with contraception, levels of self-esteem, amount of stress) and effective contraceptive use in postpartum adolescents?" The relationship of each of the independent variables with effective contraceptive use score is examined using Spearman's rank order correlation (Spearman's rho) in Table 5. None of the individual characteristics and experiences was significantly related to effective contraceptive use but some of them had relationships with one another (Table 6).

Table 5. Spearman's rho:

Effective Contraceptive Use and Individual Characteristics and Experiences

	Effective Contraceptive Use Scores	
Individual Characteristics and Experiences	Spearman's rho (r_s)	p value
Previous Experience with Contraception	.195	.087
Previous Problems with Contraception	-.025	.826
Self-Esteem	.024	.837
Stress	.049	.668

Table 6. Spearman's rho Correlation Matrix:

Individual Characteristics and Experiences

	Experience	Problems	Self-Esteem	Stress
Experience	1.00	.382**	-.122	.083
Problems		1.00	-.359**	.460**
Self-Esteem			1.00	-.327**
Stress				1.00

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

Previous Experience with Contraception

This variable was measured using the number of contraceptive methods respondents reported using in the past. Number of methods ranged from 0 to 5 with a mean of 2.33 (median 2.00; mode 2; SD 1.00) (Table 7).

The relationship between previous experience with contraception and effective contraceptive use was not significant when Spearman's rho was used. With this measure of previous experience there was no apparent significant effect on effective contraceptive use.

Table 7. Experience with Contraception: Number of Methods Used in the Past

Number of Methods Used	Frequency	Percent
None	4	5.1
One	9	11.5
Two	30	38.5
Three	28	35.9
Four	6	7.7
Five	1	1.3
TOTAL	78	100%

Previous Problems with Contraception

The number of problems subjects reported experiencing in the past were used to measure previous problems with contraception. Number of problems ranged from 0 to 4 with a mean of 1.92 (median 2.00; mode 2; SD 1.16). There was no apparent relationship between previous problems and effective contraceptive use.

The most common problems with contraception reported by the participants were inconsistent use/forgetting, unplanned pregnancy and side effects. The frequencies of reported problems are contained in Table 8.

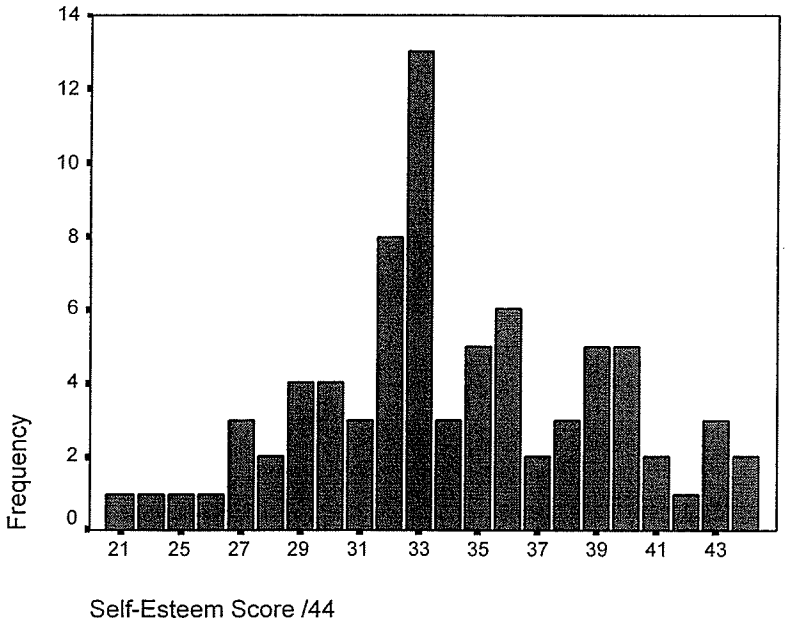
Table 8. Reported Problems with Contraception

Problem	Number of Subjects	Percent
None	8	10.3%
Side Effects	37	47.4
Inconsistent Use or Forgetting	48	61.5
Unplanned Pregnancy	39	50.0
Too Much Trouble or Effort	14	17.9
Embarrassing to Buy or to Use	3	3.8
Too Expensive	7	9.0
Not Available or Can't Get It	2	2.6

Self-Esteem

Self-Esteem was measured using the Psychosocial Assessment Tool that produces a score out of 44. In this study, reliability analysis for the self-esteem scale resulted in an alpha of .8584. The mean self-esteem score was 34.2 (SD 4.93) and scores ranged from 21 to 44. Self-esteem scores were not significantly related to effective contraceptive use scores.

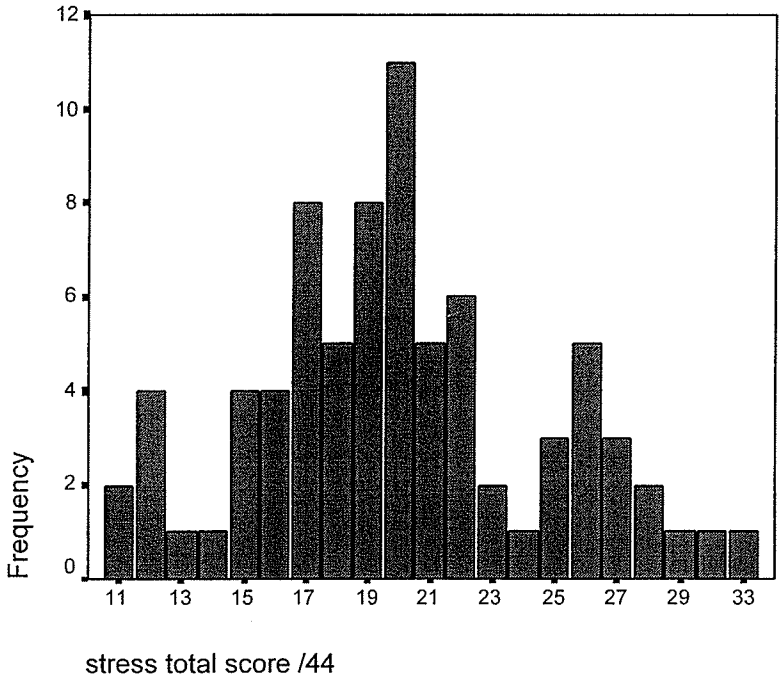
Figure 3: Self-Esteem Scores



Stress

Levels of stress were measured with the score out of 44 on the Psychosocial Assessment Tool. Reliability analysis for the stress scale resulted in an alpha of .6540. Scores ranged from 11 to 33 with a mean of 20.1 (SD 4.74) and are illustrated in Figure 4. Again, a significant relationship between stress and contraceptive use was not found.

Figure 4: Stress Scores



Research Question Two

The second research question was "What is the relationship between behavior-specific cognitions and affect (perceptions of advantages and disadvantages of contraception, self-efficacy, and subject's attitudes about contraception) and actual effective contraceptive use in postpartum adolescents?" As a preliminary step in answering question two, the relationship of each of the variables with contraceptive use was examined using Spearman's rho (Table 9). Subjects' self-efficacy and attitudes had statistically significant relationships while perceptions of advantages and disadvantages were not significantly related to contraceptive use. Correlations between the independent variables were also examined using Spearman's rho (Table 10).

Table 9. Spearman's rho:

Effective Contraceptive Use and Behavior-Specific Cognitions and Affect

	Effective Contraceptive Use Scores	
Cognitions and Affect	Spearman's rho (r_s)	p value
Perceptions of Advantages of Contraception	0.216	NS
Perceptions of Disadvantages of Contraception	-0.025	NS
Self-Efficacy	0.283	.05
Attitudes Toward Contraception	0.297	.01

NS = Not Significant

Table 10. Spearman's Rho Correlation Matrix:

Behavior-Specific Cognitions and Affect

	Advantages	Disadvantages	Self-Efficacy	Subject Attitudes
Advantages	1.00	-.175	.406**	.263*
Disadvantages		1.00	-.101	-.073
Self-Efficacy			1.00	.334*
Subject Attitudes				1.00

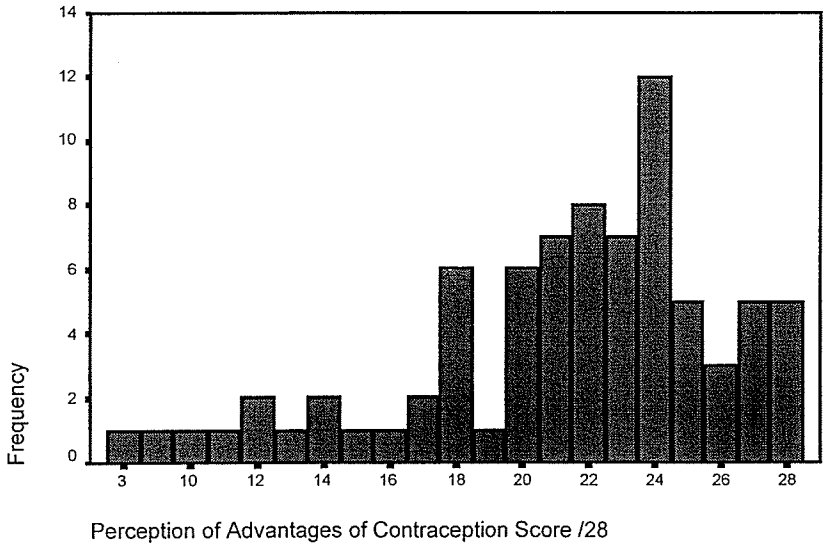
** Correlation is significant at the .01 level (2-tailed)
* Correlation is significant at the .05 level (2-tailed)

Perceptions of Advantages of Contraception

Participants' perceptions of advantages were scored out of 28 on question B7 of the Contraceptive Questionnaire. Item analysis for the advantages scale resulted in a reliability coefficient of .7584.

Scores ranged from 3 to 28 with a mean of 21.28 (SD 4.95) (Figure 5). The distribution of scores is skewed, indicating that most the respondents scored high in their perceptions of advantages. These perceptions were, however, not significantly related to effective contraceptive use but were significantly related to self-efficacy scores ($r_s = .406$; $p < .001$) and subjects' positive attitudes toward contraception ($r_s = .263$; $p = .020$).

Figure 5: Advantages Scores

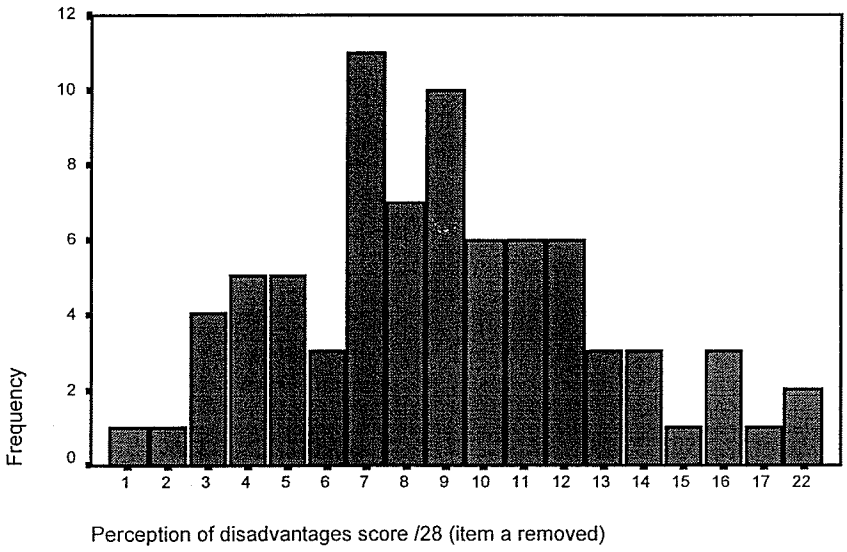


Perceptions of Disadvantages of Contraception

Question B8 of the Contraceptive Questionnaire was used to score participants' perceptions of disadvantages. Removal of item a) on the disadvantages scale increased its reliability from .5730 to .5930. The resulting scale was scored out of a possible 28 points.

Scores ranged from 1 to 22 with a mean of 9.03 (SD 4.16) (Figure 6). Perceptions of disadvantages were not significantly related to effective contraceptive use or to the other independent variables.

Figure 6: Disadvantages Scores

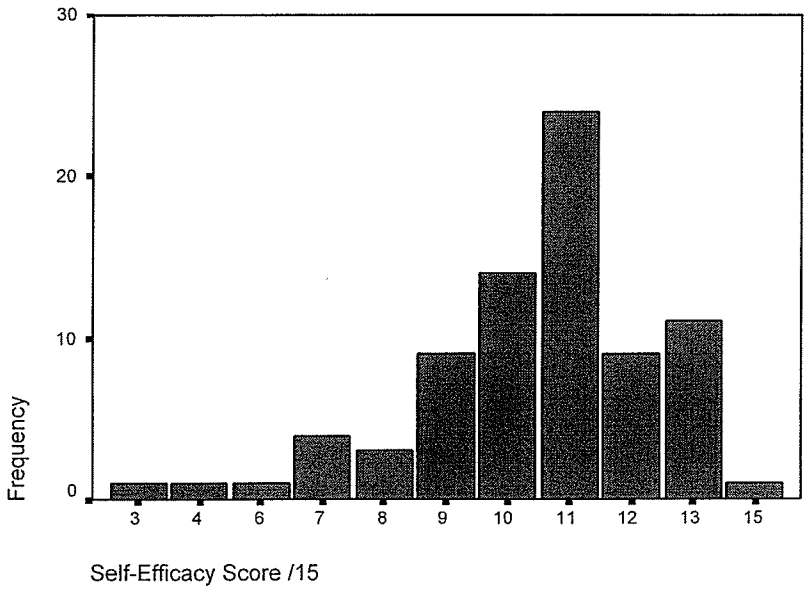


Self-Efficacy

Self-efficacy was found to have a significant bivariate relationship with effective contraceptive use (Table 9). Self-efficacy was also significantly related to perceptions of advantages (r_s = .406; p = .01) and to subjects' positive attitudes toward contraception (r_s = .334; p = .003).

This variable was scored out of 15 on questions B4 and B5 of the Contraceptive Questionnaire. Item analysis for the measure of self-efficacy resulted in an alpha score of .5519, which is marginally acceptable for a scale developed by the researcher and not yet tested. Scores ranged from 3 to 15 (mean 10.46; SD 2.06) (Figure 7).

Figure 7: Self-Efficacy Scores



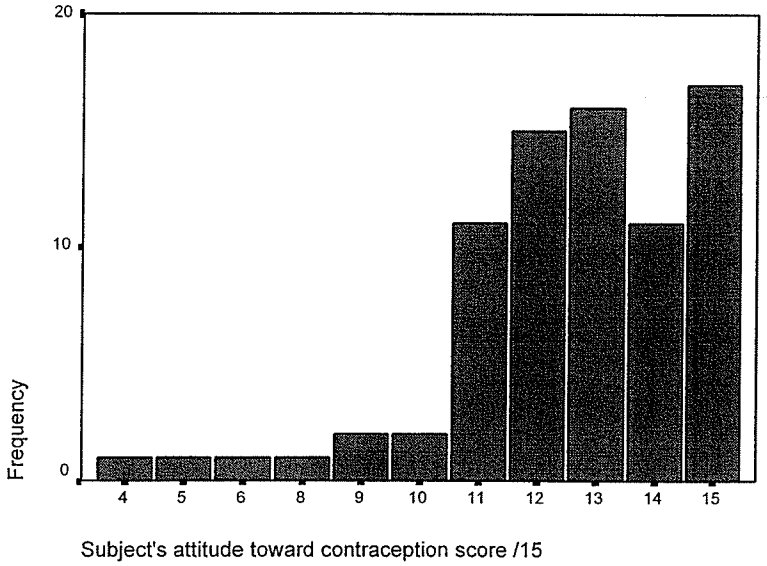
Subject's Attitude Toward Contraception

Positive attitudes were significantly correlated with effective contraceptive use (Table 9). As previously discussed, significant relationships were also found with perceptions of advantages and self-efficacy.

Subjects' positive attitudes toward contraception were measured with items a to d in question B6 of the Contraceptive Questionnaire. Item b, "Guys usually understand if girls say 'no' to having sex until they have some kind of birth control to use", was removed from the scale following reliability analysis and this increased the scale's reliability coefficient from .3543 to .5754. The resulting subject's attitudes scale was scored based on the three remaining items and resulted in a score out of a possible 15 points.

The distribution of scores is skewed, indicating that the sample of adolescents generally had positive attitudes toward contraception. In this sample the mean score was 12.55 (SD 2.25), with a range of 4 to 15 (figure 8).

Figure 8: Subject's Attitudes Scores



Ordinal Regression for Question Two

The variables for research question two were entered into an ordinal regression model to determine the importance of effects of each of the independent variables of behavior-specific cognitions and affect on effective contraceptive use. The model appears to provide adequate predictions with a chi-square significance of .005. This indicates that the model gives a significant improvement over the baseline intercept-only model.

Table 11 shows the parameter estimates for the model. Perception of disadvantages of contraception has a weak, although not statistically significant effect. Subjects' attitudes have a moderate effect that is likely clinically significant in spite of it's borderline statistical significance. Perceptions of advantages and self-efficacy apparently do not have an effect on contraceptive use.

Table 11. Parameter Estimates for Behavior-Specific Cognitions and Affect: Relationships with Effective Contraceptive Use

	Estimate	Std. Error	Wald	df	Sig.
Perception of Advantages	.236	.292	.653	1	.419
Perception of Disadvantages	.590	.338	3.049	1	.081
Self-Efficacy	.379	.277	1.879	1	.170
Subject's Attitudes	.516	.267	3.735	1	.053

Research Question Three

The third research question was "Are interpersonal influences (social supports from the subject's partner, support from significant others and subject's perceptions of attitudes of significant others) related to effective contraceptive use in postpartum adolescents?"

As a preliminary step in answering question two, interpersonal influences were examined for their relationships with effective contraceptive use using Spearman's rho (Table 12). Of these variables, only perception of partner's attitude was found to have a significant relationship with effective contraceptive use. The independent variables were also entered into a correlation matrix to determine their relationships to one another (Table 13).

Table 12. Spearman's rho Coefficient of Effective Contraceptive Use and Interpersonal Influences

	Contraceptive Use Scores	
Interpersonal Influences	Spearman's rho	p value
Satisfaction with Support from Partner	.090	NS
Satisfaction with Support from Other People	.000	NS
Perception of Partner's Attitude Toward Contraception	.381	.001
Perception of Parent's Attitude Toward Contraception	.033	NS

NS = Not Significant

Table 13. Spearman's rho Correlation Matrix: Interpersonal Influences

	Partner Support	Other Support	Partner Attitude	Parent Attitude
Partner Support	1.00	.265*	.469**	.063
Other Support		1.00	.149	.076
Partner Attitude			1.00	-.018
Parent Attitude				1.00

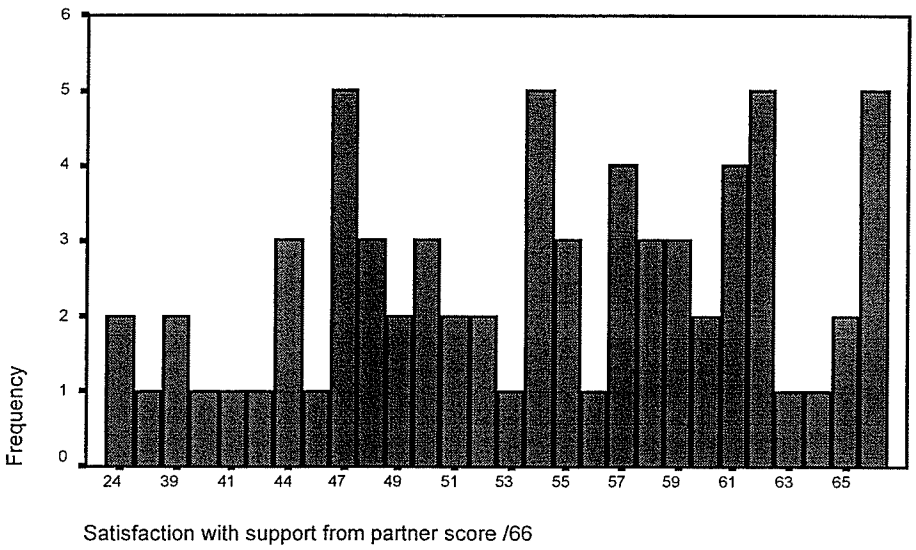
** Correlation is significant at the .01 level (2-tailed)
* Correlation is significant at the .05 level (2-tailed)

Satisfaction with Support from Partner

This variable was measured using the Psychosocial Assessment Tool, resulting in a score out of 66. Reliability analysis of the partner support scale resulted in an alpha of .9346.

The mean score was 53.2 (SD 9.54) with a range of 24 to 66 (Figure 9). Support from partner was not found to be related to effective contraceptive use (Table 12) but had a strong correlation with perception of partner's attitude toward contraception (r_s = .469; p <.001).

Figure 9: Partner Support Scores

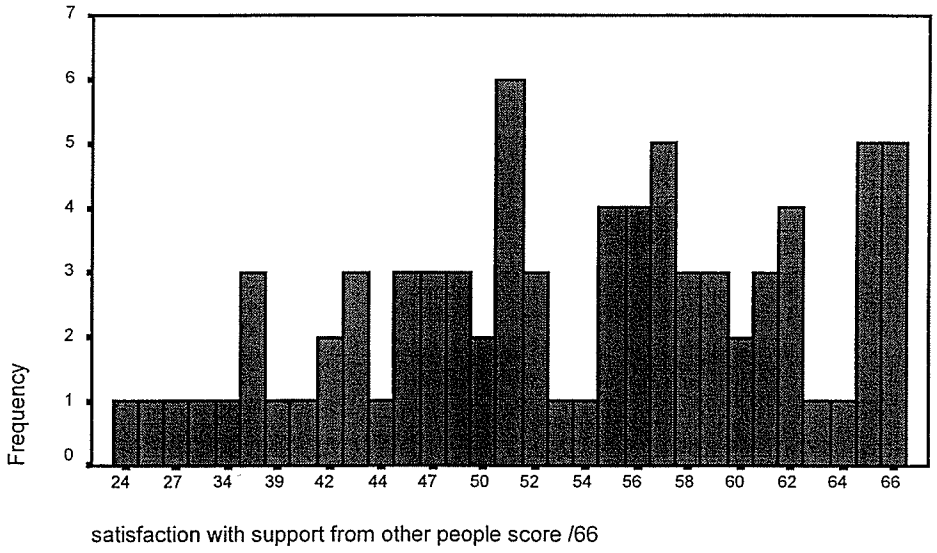


Satisfaction with Support from Other People

The Psychosocial Assessment Tool was also used to measure this variable, resulting in a score out of 66. In this study, reliability analysis resulted in an alpha of .8858.

The mean score was 52.4 (SD 10.31) with a range of 24 to 66 (Figure 10). Satisfaction with support from other people was not related to effective contraceptive use (Table 12) but was significantly related to satisfaction with support from partner.

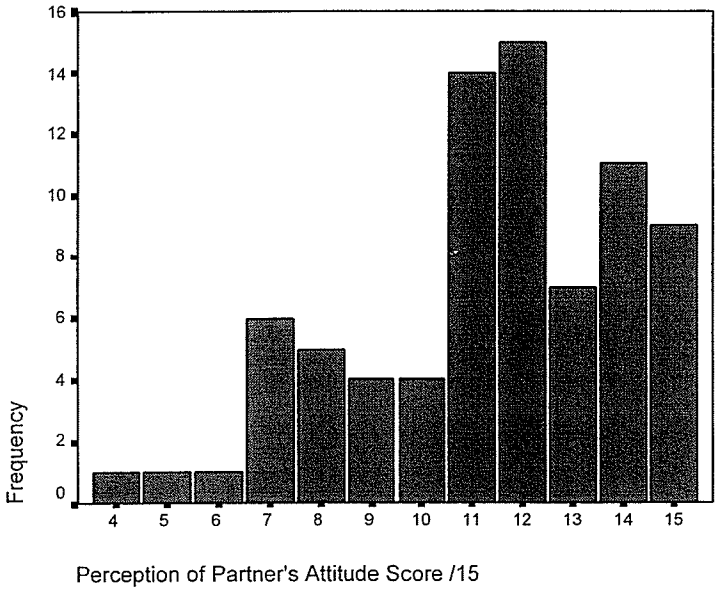
Figure 10: Support from Other People Scores



Perception of Partner's Attitude Toward Contraception

Partner's positive attitude toward contraception had a strong relationship with effective contraceptive use (Table 12) and was also significantly related to satisfaction with support from partner (Table 13). Perception of partner's attitude was measured by question B6, items e to h on the Contraceptive Questionnaire. Reliability analysis showed that removal of item h increased the reliability of the scale from .6368 to .7913 so the resulting measure of partner attitudes was based on the remaining three items and resulted in a score out of 15 with higher scores indicating the subject's perception of more positive attitudes by her partner. The mean score was 11.37 (SD 2.66) with a range of 4 to 15 (Figure 11).

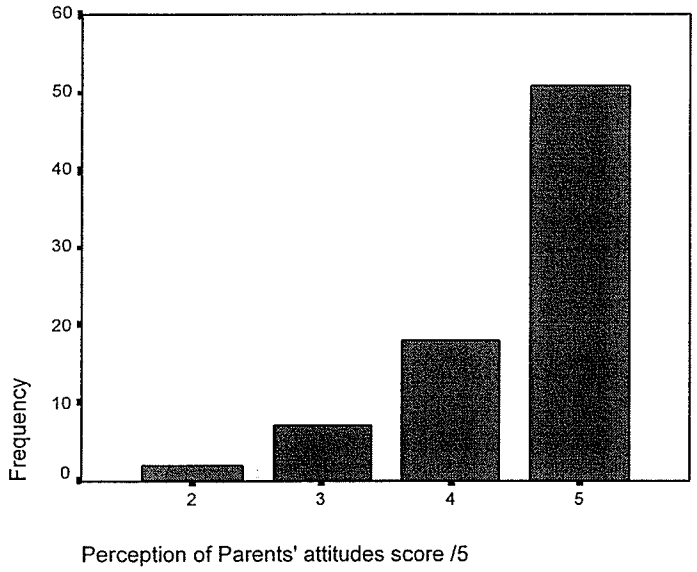
Figure 11: Partner Attitudes Scores



Perception of Parent's Attitude Toward Contraception

This variable was also measured by question B6, item i on the Contraceptive Questionnaire. Item i was initially included with items e to h to measure perception of other's attitudes but was found to reduce the reliability of the scale and so was removed and scored as a separate variable resulting in a score out of 5 points. Parent attitude scores ranged from 2 to 5 (mean 4.51; SD .77) (Figure 12). Parent's attitude was not significantly related to effective contraceptive use or other interpersonal influences.

Figure 12: Parent Attitude Scores



Ordinal Regression for Question Three

The variables for research question three were entered into an ordinal regression model. This model appears to provide adequate predictions with a chi-square significance of .003.

Perception of partner's attitude toward contraception has a strong, significant relationship with effective contraceptive use. Satisfaction with support from partner, satisfaction with support from other people and perception of parent's attitudes toward contraception do not have an effect on contraceptive use. Table 14 shows the parameter estimates for the model.

Table 14. Parameter Estimates for Interpersonal Influences: Relationships with Effective Contraceptive Use

	Estimate	Std. Error	Wald	df	Sig.
Satisfaction with Support from Partner	-.205	.252	.665	1	.415
Satisfaction with Support from Others	-.129	.221	.341	1	.559
Perception of Partner's Attitude	.849	.241	12.379	1	.000
Perception of Parent's Attitude	.219	.251	.761	1	.383

Research Question Four

The forth research question was "Which independent variables are the strongest predictors of effective contraceptive use?" Ordinal regression was the method used to answer this question.

First, the four variables that were found to have a possible effect on contraceptive use in the ordinal regression models for the first three questions were entered into an ordinal regression model. In question one, previous experience with contraception had the highest, although not statistically significant effect and so was included in the model. In question two, subject's perception of disadvantages of contraception had a weak, although not statistically significant effect and subject's attitudes toward contraception had a moderate effect with borderline statistical significance. In question three, perception of partner's attitude towards contraception was found to have a strong significant effect.

The resulting model included these four variables. It provides adequate predictions with a chi-square significance of <.001. Table 15 shows the parameter estimates for this model. Previous experience with contraception and perceptions of disadvantages apparently do not have an effect on contraceptive use. Subject's attitudes and perception of partner's attitudes toward contraception both had a significant effect on effective contraceptive use.

Table 15. Parameter Estimates: Relationships with Effective Contraceptive Use

	Estimate	Std.Error	Wald	df	Sig.
Subject's Attitudes Toward Contraception	.655	.229	8.164	1	.004
Perception of Partner's Attitudes	.598	.200	8.914	1	.003
Previous Experience	2.163E-02	.173	.016	1	.900
Perceptions of Disadvantages	.447	.336	1.769	1	.183

A final ordinal regression model was developed including subject's attitudes and perception of partner's attitudes. The parameter estimates for this final model are found in Table 16. In the final model, both subject's attitudes toward contraception and partner's attitudes toward contraception were found to have strong significant effects on effective contraceptive use.

In this final ordinal regression model, the two variables emerge as strong, significant predictors of effective contraceptive use: perception of partner's attitudes and subject's own attitudes toward contraception. Both of these variables have a significance of less than .05. The model fits the data adequately, with a chi-square significance of less than .001, indicating that it provides adequate predictions. The probability of this model predicting effective contraceptive use is significantly better than chance. Therefore, the final model consisting of perception of partner's attitudes and subject's attitudes is significantly predictive of effective contraceptive use.

Table 16: Parameter Estimates for the Final Ordinal Regression Model: Relationships with Effective Contraceptive Use

	Estimate	Std. Error	Wald	df	Sig.
Perception of Partner's Attitudes	.601	.197	9.331	1	.002
Subject's Attitudes	.462	.215	4.631	1	.031

Summary of Study Results

The first research question examined relationships between effective contraceptive use and individual characteristics and experiences. Previous experience with contraception was the variable that was found to have the strongest relationship with contraceptive use although it was not statistically significant.

The second research question explored the relationship between effective contraceptive use and behavior-specific cognitions and affect. Self-efficacy and subject's attitudes toward contraception were related to contraceptive use when Spearman's rho was used. In the ordinal regression model, subject's perceptions of disadvantages had a weak effect (not statistically significant) and subject's attitudes had a moderate, although not statistically significant, effect.

The third research question explored the relationship between effective contraceptive use and interpersonal influences. In this study, only perception of partner's attitude was significantly related to contraceptive use. Respondents who perceived more positive attitudes in their partners were more likely to use contraceptives effectively.

The fourth research question explored which of the independent variables were the strongest predictors of effective contraceptive use. A final ordinal regression model composed of subject's attitudes and subject's perception of partner's attitudes toward contraception significantly predicted effective contraceptive use in the respondents. More positive attitudes of both the adolescent mother and her partner are significantly related to more effective contraceptive use.

Chapter 6: Discussion, Nursing Implications and Recommendations

This chapter begins with a discussion of the study findings and the examination of the results for each of the four research questions as they relate to previous studies. The limitations of this study are discussed as well as implications for nursing practice, theory and education. Recommendations for future nursing research related to adolescent contraceptive use are made.

Discussion of Findings

Pender's (1996) Health Promotion Model (HPM) contends that individual characteristics and experiences and behavior-specific cognitions and affect both directly and indirectly influence the likelihood of an individual adopting a particular health-promoting behavior. Only one study was located that examined adolescent contraceptive use using the HPM. Felton (1996) examined factors that differentiate contraceptive use behaviors of sexually active adolescent females and found that positive self-image was positively related to contraceptive use and that teenagers who had had a previous pregnancy were less likely to use contraception.

The purpose of this study was to examine the variables in the HPM for their association with effective contraceptive use by adolescent mothers in the first postpartum year. Seventy-eight 15 to 19 year-old mothers completed the series of questionnaires between three and 12 months postpartum. Data analysis included construction of correlation matrices to examine relationships of the independent variables with one another and with effective contraceptive use. An ordinal regression procedure was used

to determine which variables were significantly predictive of effective contraceptive use. None of the individual characteristics and experiences variables had significant correlations with the dependent variable. Of the behavior-specific cognitions and affect, only subject's positive attitudes and perception of partner's positive attitudes toward contraception were ultimately related to effective contraceptive use. Some of the other variables had relationships with contraceptive use when bivariate analysis was used but these did not appear when entered into the ordinal regression model.

Bivariate Relationships Between Variables

Subject's attitudes toward contraception, perceptions of partner's attitude toward contraception and self-efficacy had significant bivariate relationships with effective contraceptive use in the study sample. Many of the other independent variables were correlated with these three variables and with one another (Figure 2, p. 42). The resulting model suggests that many of the independent variables may have indirect relationships with effective contraceptive use. For example, perception of parent's attitudes may influence the subject's perceptions of advantages of contraception, which may influence subject's attitudes which influences effective contraceptive use. Self-efficacy appears to have a direct effect on contraception as well as indirect effects through its correlations with subject's attitudes toward contraception and perceptions of partner's attitude toward contraception.

Research Question One

The first research question was "What is the relationship between individual characteristics and experiences (previous contraception experience, previous problems, levels of self-esteem and amount of stress) and effective contraceptive use in postpartum adolescents?" In this study, none of these independent variables were related to effective contraceptive use. There were no significant correlations between previous experience and previous problems and contraceptive use although experience and problems were related to one another. These variables have not been examined in the located literature for their relationship with contraceptive use in adolescents although Garcia and colleagues (1995) found that previous exercise behavior fell slightly short of the .05 level of significance in their study of factors that influence adolescents' actual exercise behavior.

In bivariate analyses, previous problems were significantly related to self-esteem (negative correlation), stress, perceptions of disadvantages and self-efficacy (positive correlations). Previous problems may therefore have an indirect influence on contraceptive use, which was found in question two to be related to self-efficacy. This suggestion is in agreement with Pender (1996), who proposes that prior behavior may have both direct and indirect effects on the likelihood of engaging in health promotion behaviors.

Self-esteem and stress were negatively correlated with one another but not related to contraceptive use. Kellinger (1985) similarly found that self-esteem scores were not associated with contraceptive use. In another study, no significant relationship between self-esteem and subsequent pregnancy was found (Vernon, et al, 1983) and Hacker and

colleagues (2000) found no difference in self-esteem levels between consistent and inconsistent contraceptive users. Others have found that self-esteem plays an important role in adolescents' health behaviors in general (Torres & Fernandez, 1995; Torres, Fernandez & Maceira, 1995) and in contraceptive use in particular (Abood & Conway, 1992; Kowaleski-Jones & Mott, 1998). Seigley (1999) postulates that inconsistent study results suggest that other variables may mediate the relationship between self-esteem and health behaviors.

In this study, the sample of adolescents had relatively high self-esteem scores (mean was 34.2 on a scale out of 44) and the majority of participants scored high on the Effective Contraceptive Use scale (57.7% scored 9 or 10 on the 10 point scale). The high scores on the Effective Contraceptive Use scale are related to the high proportion of respondents that were using Depo Provera since these scores were significantly higher than those who were using other methods. It is possible that a wider range on both scales may be necessary to demonstrate a significant association between self-esteem and contraceptive use.

No literature was located that examined the relationship between stress and contraceptive use in adolescents. Morgan and colleagues (1995) found no difference in stress levels between sexually active teenagers who become pregnant and those who did not. This finding was supported in this research project as well, with no correlation found between stress and effective contraceptive use.

Research Question Two

The second research question was, "What is the relationship between behavior-specific cognitions and affect (perceptions of advantages and disadvantages of contraception, self-efficacy and attitudes about contraception) and actual effective contraceptive use in postpartum adolescents?" Pender (1996) proposes that self-efficacy influences perceived advantages and disadvantages and is influenced by the individual's attitudes.

The bivariate analyses used in answering question two showed that self-efficacy and subjects' attitudes toward contraception had significant relationships with contraceptive use while perceptions of advantages and disadvantages of contraception were not significantly related to contraceptive use. Ordinal regression including these variables showed marginal significance of subjects' attitudes relationship with effective contraceptive use and non-significant relationships of the other three variables with contraceptive use.

Subject's attitudes had the highest correlation with contraceptive use in this study and were marginally correlated with contraceptive use in the ordinal regression model. This finding is in agreement with the research of Sable, Libbus & Chiu (2000) and Miller (1986) who found that adult women who had negative attitudes toward contraception tended to be infrequent contraceptive users. Positive attitudes towards condoms appear to promote their consistent use in adolescents (Keller, Duerst, & Zimmerman, 1996). Zabin and colleagues (1993) similarly found that a positive attitude toward contraception in adolescent women was significantly associated with their use of contraception. Positive attitudes regarding the consequences of teen pregnancy were also found to be

related to unprotected sexual activity in adolescents (Unger, Molina, & Teran, 2000). On the other hand, Gispert and colleagues (1984) reported that attitudes did not predict contraceptive use in adolescents and Jaccard and colleagues (1990) found attitudes to be relatively uncorrelated with contraceptive use.

Self-efficacy and effective contraceptive use were related in bivariate analysis but this relationship was not demonstrated in the ordinal regression model for question two. Self-efficacy was also related to positive attitudes toward contraception, previous experience, perception of partner's attitude, perception of parent's attitude and perception of advantages of contraception. This suggests that self-efficacy may have both direct and more complex, indirect effects on effective contraceptive use. Pender (1996) similarly proposes that the behavior-specific cognitions and affect directly and indirectly influence health promotion behaviors. Lowe (1996) suggests "experience is generally the most powerful way to develop self-efficacy" (p. 86) and Bandura (1977) states the "efficacy expectations are a major determinant of people's choice of activities" (p. 194). In adolescents, condom self-efficacy has been found to be related to frequency of condom use and reduced sexual risk behavior (Basen-Engquist, & Parcel, 1992; Sieving, et al., 1997; Taylor-Seehafer, & Rew, 2000). Conversely, Crosby and colleagues (2001) concluded that adolescent females' condom self-efficacy was unrelated to sexual risk behaviors. Self-efficacy was found to be a strong predictor of a number of more general health promotion behaviors in adults in a number of studies (Gillis, 1993; Martinelli, 1999; Norman, 1995; Piazza, Conrad, & Wilbur, 2001). The relationship of self-efficacy with health promotion behaviors in general and adolescent condom use in particular is

supported in the literature and in this study only in the bivariate analysis with effective contraceptive use.

Subjects' perceptions of advantages and disadvantages of contraception did not have significant relationships in the bivariate analysis with effective contraceptive use. Pender (1996) proposes that perceived advantages and disadvantages are influenced by self-efficacy, which is in turn, influenced by the individual's attitudes or feelings about a particular health promotion behavior. These relationships found some support in this study since perceived advantages or benefits, self-efficacy and subject's attitudes were significantly related to one another in the bivariate analysis.

In the ordinal regression model that included the behavior-specific cognitions and affect variables, none of the variables were statistically significant predictors of effective contraceptive use. Only subject's attitudes toward contraception had a marginally significant effect as a predictor of contraceptive use.

Research Question Three

The third research question was "Are interpersonal influences (social supports from the subject's partner, support from significant others and subject's perception of attitudes of significant others) related to effective contraceptive use in postpartum adolescents?" Pender (1996) suggests that interpersonal influences affect health promotion behaviors directly and indirectly through social pressures or encouragement from others.

In this study, only perception of partner's positive attitude toward contraception was found to be significantly related to effective contraceptive use in the bivariate

correlations. In the ordinal regression model, partner's attitude was the only interpersonal influence variable that was significantly predictive of effective contraceptive use. This finding is consistent with two studies that found partner's attitude or expectations influenced adolescent women's contraceptive use and that it often was a joint decision with the woman's partner whether to use contraception (Maxwell, Bastani, & Yan, 1995; Nadelson, Notman, & Gillon, 1980). Conversely, Zabin and colleagues (1993) concluded that partner's wishes did not impact contraceptive behavior of female adolescents.

Perceptions of parent's attitudes toward contraception were not found to be significantly related to contraceptive use in this sample. Jaccard and Dittus (2000) similarly concluded that positive maternal attitude toward contraception was not associated with its use by adolescents.

Satisfaction with support from the participants' partner or from other people also was not significantly related to contraceptive use in this study. Previous research projects in this area show mixed results with some reporting no relationship between these variables (Mapanga & Andrews, 1995), an increased likelihood of repeat pregnancy with supportive parents (Adams, et al., 1990), or adequate social support strongly associated with contraceptive compliance (Berenson & Wieman, 1997). No literature was located that specifically examined support from the adolescent woman's partner as related to contraceptive use.

The variables examined as interpersonal influences in this research project showed some correlations to one another in the bivariate analysis. Partner's attitudes were strongly correlated with partner support and support from others was related to

partner support. This, again, suggests that interpersonal influences may have direct and indirect influences on contraceptive behavior as Pender (1996) suggests in her model.

Research Question Four

The fourth question was "Which independent variables are the strongest predictors of effective contraceptive use in postpartum adolescents?" In the final ordinal regression model, the subject's perception of partner's attitudes and the subject's own attitudes toward contraception both had strong, significant relationships with effective contraceptive use in the study sample of postpartum adolescents.

These findings support Pender's (1996) assertion that activity-related affect and interpersonal influences affect health promotion behavior, in this case, effective contraceptive use. In this research project the findings suggest that if the individual has positive attitudes or feelings toward contraceptive use, she is more likely to use it effectively. Pender suggests that it is the balance between positive and negative affect before, during and after a health promotion activity likely affects whether the behavior will be repeated or maintained. The results of this study also suggest that the more positive the subject's partner's attitude toward contraception, the more likely she is to use it effectively. According to Pender (1996), "susceptibility to the influence of others may vary developmentally and be particularly evident in adolescence" (p. 71). This statement finds strong support related to partner attitudes but not related to parent attitudes in the findings of this research. This is not surprising since peer influence on behavior can be strong during adolescence.

Summary of Discussion of Findings

Individual characteristics and experiences did not prove to be directly related to the dependent variable in this study. Of the behavior-specific cognitions and affect, subject's attitudes had a borderline significant relationship with contraceptive use in the bivariate analysis. Of the interpersonal influences examined, only perception of partner's attitudes were related to contraceptive use. In the final model, postpartum adolescent's positive attitudes and their perception of partner's positive attitudes toward contraception were significantly related to actual effective contraceptive use. Partner attitudes had the strongest statistically significant relationship.

The study results partially support the Health Promotion Model regarding the influence of others' and one's own attitudes or feelings about contraception on contraceptive use in postpartum adolescents. Since many of the variables examined in this research project are related to one another (figure 2, p. 42), it appears that some of them may have indirect influences on effective contraceptive use in this population. For example, subject's attitude toward contraception had bivariate relationships with previous experience, previous problems, self-esteem, stress, advantages, disadvantages and self-efficacy. It is possible that these other variables may have indirect effects on effective contraceptive use through an influence on the subject's attitudes. Similarly, partner attitudes showed bivariate relationships with satisfaction with support from partner, self-efficacy and subject attitudes so these may also indirectly affect the dependent variable by having an effect on the subject's perceptions of her partner's attitude toward contraception.

The diagram in Figure 2 (page 42) depicts a model that identifies the variables associated with effective contraceptive use in postpartum adolescents. This diagram demonstrates the complexity of postpartum contraception in adolescent mothers and thus the prevention of subsequent pregnancy in this population. Many variables influence actual effective contraceptive use and the challenge that faces health professionals supporting teenage mothers' attempts to delay subsequent pregnancies can be overwhelming.

Limitations

There are a number of limitations that may have weakened the validity of and the ability to generalize the study findings. These limitations must be kept in mind when viewing the results and suggest that the findings must be interpreted with caution.

Sample Limitations

The use of a convenience sample limits the generalizability of the study results because of the risk of bias (LoBiondo-Wood & Haber, 1994; Polit & Hungler, 1997). Because of self-selection into the study, respondents who volunteered to participate may differ in some way from those who refused to participate. In this study, only 38% of the teenage mothers who agreed to participate while still in hospital actually participated after three months postpartum because some changed their mind and most were lost to follow-up. Had these young women actually participated, the results of the study may have been different.

There were a higher percentage of Aboriginal or Métis participants in this study (56.4% of the participants) than are found in the general population of adolescents in Manitoba and this could limit the findings. However, forty-five percent of adolescent mothers in Manitoba are Aboriginal with even higher percentages in Central Winnipeg (70%) (Manitoba Children and Youth Secretariat, 1996). Since the Health Sciences Centre is located in central Winnipeg and the majority of the respondents (85.9%) were recruited from this hospital, this is a possible explanation for the high number of Aboriginal or Métis participants. The results of this study therefore may be more easily

generalized to the population of adolescent mothers in the central Winnipeg area than they could be to the population of Manitoba or Canada.

The lack of variabililty of the sample with respect to some of the variables in this study also limits the findings. Nearly fifty-eight percent of the sample rated "high" (score of nine or ten out of ten) on the Measure of Effective Contraceptive Use scale. The ability to compare those with low, moderate and high effectiveness on this scale may be hampered by the skewed distribution of the scores. The distributions of the scores on some of the other scales (e.g. subject's attitude, perception of advantages, self-esteem) were also skewed. It is possible that with a larger sample size, there would have been a wider range on the various scales and that higher numbers of significant relationships between some of the independent variables and effective contraceptive use may have been demonstrated.

There also was a relatively large proportion (41%) of the respondents that were using Depo Provera as their main contraceptive method at the time of data collection. In the 1998 Canadian Contraception Study, one percent of the respondents were using Depo Provera while 28% were using oral contraceptives (Society of Obstetricians and Gynaecologists of Canada, 2000). Hacker and colleagues (2000) reported that 4.4% of their sample of adolescents were using Depo Provera. The higher proportion of adolescents in this sample may be a study limitation since those respondents who choose Depo Provera are likely to score higher on the Measure of Effective Contraceptive Use. This was demonstrated by the results of the t-test that determined the mean contraceptive use score for those using Depo Provera differed significantly from the mean score for

those using other methods. Depo Provera users also may differ in some other ways from those who choose other methods of contraception.

Limitations Related to Instrumentation

The researcher developed two of the scales used in this study, the "Contraceptive Questionnaire" and the "Measure of Effective Contraceptive Use". These were used to measure most of the variables under investigation. Although the items on these questionnaires were based on previous research related to adolescent contraception, the questions and the scales have not been previously tested. Therefore, the study results must be interpreted with caution.

Reliability coefficients for the scales developed by the researcher ranged from .5519 to .7193, indicating that some of the scales have relatively high measurement error. A level of .70 or higher is considered an acceptable level of reliability (Polit & Hungler, 1997). Perception of partner's attitudes, perception of disadvantages, self-efficacy and subject's attitudes had borderline levels of reliability and this may have led to more error in the measurement of these variables.

A final limitation related to instrumentation in this study stems from the fact that perception of parent's attitude is based on the score on only one question. This item was scored separately from the perception of partner's attitude questions following reliability analysis. Therefore, it is possible that if measurement of this variable was based on a number of questions, it may have produced different results.

Implications for Nursing Practice, Theory, and Education

Several implications for nursing practice emerge from the results of this study. First, nurses working with adolescent mothers must be aware that the young woman's attitudes toward contraception will influence its effective use. More positive attitudes result in more effective contraceptive use. Therefore, assessing attitudes and feelings toward contraception and focusing interventions and teaching on improving positive attitudes are very important in improving the adolescent's success with contraceptive use.

Nurses must also be aware that the adolescent mother's perception of her partner's attitude toward contraception is strongly related to its effective use. Assessment of the partner's contraceptive attitudes is important so interventions and teaching can be aimed at increasing positive attitudes in the young woman's partner. It is obvious, then, that actively involving the partner in discussions, teaching and decision-making related to the contraception is of utmost importance. Since positive partner attitudes positively affect effective contraceptive use in the young mother, nurses should avoid focusing only on the young mother when planning nursing interventions and should, whenever possible, encourage active participation of the partner.

Implications for nursing theory also emerge from this study. Pender's (1996) Health Promotion Model provided the framework for this study. A model emerged that strongly supported a relationship between attitudes of adolescent mothers and their partners and effective contraceptive use. There is a need to further examine the Health Promotion Model related to contraception in this population. There is also a need to further investigate some of the other variables that were related more indirectly to the

dependent variable to further support the use of this framework when examining effective contraceptive use in adolescents. The model depicted in Figure 2 demonstrates the direct and indirect relationships of the independent variables with effective contraceptive use found in this study. Further use of this theoretical framework may contribute to refinement and application in nursing practice.

Implications for nursing education include the need for students to understand the importance of including significant others in interventions related to health promotion activities. In the case of teenagers, the most significant other may not be a parent or relative. When aiming interventions toward adolescent health behaviors, students must be aware that the teenage woman's behavior is influenced by both her own and other's, especially the partner's, attitudes toward the health behavior. In the case of adolescent sexuality and contraception, it is important for students to understand that the young woman's partner may have the strongest effect on her behavior and success with effective contraceptive use. Therefore the adolescent's partner must be encouraged to play an active role in discussions and decision-making related to the teenage mother's contraceptive use.

Implications for Nursing Research

While this study identified two variables that were significantly related to effective contraceptive use in adolescent mothers, further research is needed. Further testing of the model that was constructed with the study results (Figure 2) is necessary. A larger sample size, drawn from locations other than hospital or clinic settings, is necessary to confirm these findings and to investigate whether significant relationships exist between contraceptive use and the other variables examined in this research. Results might identify additional areas on which nurses should focus when planning interventions aimed to assist adolescent mothers' to effectively use contraception.

The measurement tools developed by the researcher in this study also require further testing to ensure that they are valid and reliable. Additional items could be added to the question intended to measure parent's attitudes to further examine if these are related to young women's contraceptive use. A duplication of this study with a different sample of adolescent mothers will assist in further establishing the usefulness of the questionnaires used to measure the various variables of interest.

It is necessary to further examine adolescent women's attitudes toward contraception and its effective use. Research that includes interventions aimed at increasing the adolescent's positive attitudes such as participation in classes or teaching that focuses on the positive aspects of contraceptive use should be done. This would help to determine whether this is an area where nursing interventions should focus when the goal is assisting young women to use contraception effectively.

Further research involving partners of adolescent women and their influence on contraceptive use is needed. Since partner's attitudes appear to influence teenage women's effective contraceptive use, further research is needed that includes interventions such as teaching partners about positive aspects of contraceptive use and active participation of the partner in teaching and decision-making. These interventions that focus on improvement of the partner's attitudes should be examined to determine if they actually improve effective contraceptive use in this population.

Conclusion

Pender's (1996) Health Promotion Model provided the framework for this study that was designed to explore and describe the relationship between the independent variables identified in the Model and effective contraceptive use in postpartum adolescents. Only two of the variables, subject's attitudes toward contraception and subject's perception of her partner's attitudes toward contraception, were found to be significantly predictive of effective contraceptive use. The study produced a model that included these two variables and had a probability of predicting effective contraceptive use in postpartum adolescents that is significantly better than chance.

Because of the exacerbation of the negative consequences of teenage childbearing that results from early repeat pregnancies, knowledge gained regarding the factors that contribute to effective contraceptive use and therefore prevention of recidivism in this population can significantly improve health outcomes. The results of this study provide guidance for both future research related to contraceptive use in adolescent females and interventions that are aimed at assisting teens to delay subsequent pregnancy and therefore improve the outcomes for adolescent mothers and their children.

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Appendix A:

Demographic Data Collection Form

Demographic Data Collection Form

Date: _____ Study ID # _____

1. Date of Birth ____/____/____
   Day Month Year

2. G___P___TA___SA___Ectopic___

3. Date of Delivery ____/____/____
   Day Month Year

4. Have you become pregnant again since the birth of your baby? 0. NO 1. YES

5. Parenting baby? 0. NO 1. YES

6. Who do you and your baby live with? *(Can check more than one answer)*

___ 1. Mother
___ 2. Father
___ 3. Other Relatives
___ 4. Boyfriend
___ 5. Boyfriend's Family
___ 6. Husband
___ 7. Friend
___ 8. Group Home
___ 9. Foster Home
___ 10. Alone
___ 11. Maternity Home (Villa Rosa, Lindenview)
___ 22. Other _____

7. Are you attending school? 0. NO 1. YES

8. What is the highest grade you have completed at school? (Circle)

   1 2 3 4 5 6 7 8 9 10 11 12

   Years of post secondary education: 1 2

9. How do you get money to live? *(Can check more than one answer)*

___ 1. From my family
___ 2. I support myself by working
___ 3. My boyfriend supports us
___ 4. I receive Social Assistance (Welfare)
___ 5. I work the streets
___ 6. Child and Family Services
___ 7. TURF Program
___ 8. Boyfriend's Family
___ 9. Employment Insurance
___ 10. Other _____

Study ID # _____

10. What cultural group do you belong to?

___ 1. Asian
___ 2. Aboriginal/Metis
___ 3. Afro-Canadian
___ 4. Caucasian
___ 5. Hispanic
___ 6. Other _____

11. What is your religion?

___ 1. Catholic
___ 2. Protestant
___ 3. Jewish
___ 4. Buddhist
___ 5. Other _____

12. When do you want to have your next pregnancy?

___ 1. As soon as possible
___ 2. Within 1 year
___ 3. Within 2 years
___ 4. 2 or more years from now
___ 5. Don't want any more children

Appendix B:

Contraceptive Questionnaire

Contraceptive Questionnaire

Study ID# _____

B1. In the past, how successful have you been when using birth control methods to prevent pregnancy?

___ 1. Very successful
___ 2. Fairly successful
___ 3. Not very successful
___ 4. Not at all successful

B2. What types of birth control have you used in the past? *(check all that apply)*

___ 1. None
___ 2. Oral Contraceptives (Birth Control Pills)
___ 3. Depo Provera
___ 4. Implant (Norplant)
___ 5. Condoms
___ 6. Spermicide (Foam), Sponge or Diaphragm
___ 7. I.U.C.D.
___ 8. Morning After Pill
___ 9. Other _____

B3. Did you have any of the following problems with methods of birth control that you used in the past? *(check all that apply)*

___ 1. Not Applicable *(Never used contraception in the past)*
___ 2. None
___ 3. Side effects
___ 4. Inconsistent use *(Not using it all the time)* or forgetting
___ 5. Unplanned pregnancy
___ 6. Too much trouble or effort
___ 7. Embarrassing
___ 8. Too expensive
___ 9. Not available/can't get it
___10. Other _____

Study ID# _____

B4. If you decided to use the following methods of birth control, how effectively or correctly do you think you could use each one?

(Circle the number next to each that corresponds with respondent's answer).

	Wouldn't Use	Very Effectively	Fairly Effectively	Not Very Effectively	Not at all Effectively
1. BIRTH CONTROL PILLS	0	1	2	3	4
2. DEPO PROVERA	0	1	2	3	4
3. NORPLANT (Implant)	0	1	2	3	4
4. CONDOMS	0	1	2	3	4
5. SPERMICIDE (Foam), SPONGE or DIAPHRAGM	0	1	2	3	4
6. I.U.C.D. (Coil)	0	1	2	3	4
7. MORNING AFTER PILL	0	1	2	3	4

B5. Overall, how well do you think you could do at using birth control to prevent pregnancy?

___ 1. Very well

___ 2. Fairly well

___ 3. Not very well

___ 4. Very poorly

Study ID#_____

B6. How much do you agree or disagree with each of the following statements?

		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
a)	I would only have sex if my partner or I were using some kind of birth control.	1	2	3	4	5
b)	Guys usually understand if girls say 'no' to having sex until they have some kind of birth control to use.	1	2	3	4	5
c)	I feel that a girl has to make sure she has a method of birth control so that she won't get pregnant.	1	2	3	4	5
d)	Using birth control is important for me because another pregnancy would get in the way of my plans for the future.	1	2	3	4	5
e)	My partner would understand if I said 'no' to having sex until we had a reliable birth control method to use.	1	2	3	4	5
f)	My partner would insist that we wait to have sex if we had no way to prevent me from getting pregnant.	1	2	3	4	5
g)	My partner is not at all happy with the method of birth control I am using now.	1	2	3	4	5
h)	My partner wants me to get pregnant again soon.	1	2	3	4	5
i)	My parents think it is important that I use a good method of birth control so I won't get pregnant in the near future.	1	2	3	4	5

Study ID#_____

B7. Are the following statements about birth control true for you?

For each statement that you feel is true, tell me whether you think it is an advantage (a good thing) about birth control. Do you think it is not an advantage, a small advantage, a big advantage or a huge advantage of using birth control or contraception?

	Not True	Not an Advantage	A Small Advantage	A Big Advantage	A Huge Advantage
a) Using birth control makes me feel more responsible for my own body.	0	1	2	3	4
b) Using birth control prevents an unwanted pregnancy.	0	1	2	3	4
c) Using birth control helps me to have control over my own life.	0	1	2	3	4
d) Using birth control allows me to enjoy intercourse (sex) more.	0	1	2	3	4
e) Others will approve of me using birth control.	0	1	2	3	4
f) If I use birth control, others will know that I am responsible and grown-up.	0	1	2	3	4
g) Using birth control will help me avoid pregnancy so that I can finish school, start a career and carry out my plans for the future.	0	1	2	3	4

Study ID#_____

B8. Are the following statements about birth control true for you?

For each statement that you feel is true, tell me whether you think it is a disadvantage (or a bad thing) about birth control. Is it: not a disadvantage, a small disadvantage, a big disadvantage, or a huge disadvantage of using a method of birth control?

	Not True	Not a Disadvantage	A Small Disadvantage	A Big Disadvantage	A Huge Disadvantage
a) Birth control sometimes doesn't work.	0	1	2	3	4
b) Birth control has side effects.	0	1	2	3	4
c) Birth control has health risks.	0	1	2	3	4
d) Birth control can make sex less romantic or too planned.	0	1	2	3	4
e) Birth control can be uncomfortable or embarrassing to buy or to use.	0	1	2	3	4
f) My partner, family or friends will disapprove of me using a method of birth control.	0	1	2	3	4
g) Birth control methods are too expensive and I can't afford to buy them.	0	1	2	3	4
h) For some kinds of birth control, I would have to have a medical check-up before starting to use them.	0	1	2	3	4

Appendix C:

Psychosocial Assessment Tool - Prenatal Psychosocial Profile

Study ID#_____

Psychosocial Assessment Tool

Assessment of Stress

Ask the woman to what extent the following factors are current stressors/hassles. Circle the number corresponding to the appropriate response.

To what extent is each of the following things a current stressor or hassle for you? (How much stress does each of these cause for you?)

	No Stress	Some Stress	Moderate Stress	Severe Stress
C1A. Financial worries (e.g. food, shelter, transportation)	1	2	3	4
C1B. Other money worries (e.g. bills, etc.)	1	2	3	4
C1C. Problems related to family (partner, children, etc.)	1	2	3	4
C1D. Having to move, either recently or in the future.	1	2	3	4
C1E. Recent loss of a loved one.	1	2	3	4
C1F. Your young baby.	1	2	3	4
C1G. Current abuse; sexual, emotional or physical.	1	2	3	4
C1H. Problems with alcohol and/or drugs.	1	2	3	4
C1I. Work problems (e.g. being laid off, etc.).	1	2	3	4
C1J. Problems related to friends.	1	2	3	4
C1K. Feeling generally "overloaded" or "stressed out".	1	2	3	4

Assessment of Support

Study ID#_____

This next set of questions asks how satisfied you are with the amount of support you receive from your partner and/or other people.

C2. First of all, do you have a partner? ___ 0. NO *(ask only about support from others)*
___ 1. YES

I will read you a list of statements describing types of support. On a scale of 1 to 6, with 1 being very dissatisfied (or unhappy) and 6 being very satisfied (or happy), I want you to tell me how satisfied you are with the support you receive from *(your partner/other people)*.

	PARTNER						OTHER PEOPLE					
	Very Dissatisfied					Very Satisfied	Very Dissatisfied					Very Satisfied
C2A. Shares similar experiences with me.	1	2	3	4	5	6	1	2	3	4	5	6
C2B. Helps keep up my morale (spirits).	1	2	3	4	5	6	1	2	3	4	5	6
C2C. Helps me out when I'm in a pinch.	1	2	3	4	5	6	1	2	3	4	5	6
C2D. Shows interest in my daily activities and problems.	1	2	3	4	5	6	1	2	3	4	5	6
C2E. Goes out of his/her way to do special or thoughtful things for me.	1	2	3	4	5	6	1	2	3	4	5	6
C2F. Allows me to talk about things that are very personal and private.	1	2	3	4	5	6	1	2	3	4	5	6
C2G. Lets me know I am appreciated for the things I do for him/her.	1	2	3	4	5	6	1	2	3	4	5	6
C2H. Tolerates my ups and downs and unusual behaviors.	1	2	3	4	5	6	1	2	3	4	5	6
C2I. Takes me seriously when I have concerns.	1	2	3	4	5	6	1	2	3	4	5	6
C2J. Says things that make my situation clearer and easier to understand.	1	2	3	4	5	6	1	2	3	4	5	6
C2K. Lets me know that he/she will be around if I need assistance.	1	2	3	4	5	6	1	2	3	4	5	6

If respondent has partner: Now I will read these statements again, and I want you to tell me how satisfied you are with the support you receive from people other than your partner.

Study ID#_____

Assessment of Self Esteem

We all have some kind of "picture" of ourselves we carry with us. I'm going to read you a list of statements that people have used to describe themselves. I would like you to tell me how much you agree or disagree that this statement describes yourself.

	Strongly Agree	Agree	Disagree	Strongly Disagree
C3A. Feel that you're a person of worth, at least on an equal basis with others.	1	2	3	4
C3B. Feel that you have a number of good qualities.	1	2	3	4
C3C. All in all, feel that you are a failure.	1	2	3	4
C3D. Feel you are able to do things as well as most other people.	1	2	3	4
C3E. Feel you do not have much to be proud of.	1	2	3	4
C3F. Take a positive attitude toward yourself.	1	2	3	4
C3G. On the whole, feel satisfied with yourself.	1	2	3	4
C3H. Wish you could have more respect for yourself.	1	2	3	4
C3I. Feel useless at times.	1	2	3	4
C3J. At times think you are no good at all.	1	2	3	4
C3K. Feel like you have control over your life.	1	2	3	4

C3L. Did this interview bring up any concerns or questions that you would like to discuss with your health care provider?

___ 0. NO ___ 1. YES

C3M. Would you like me to approach your health care provider with this concern or question for you?

___ 0. NO ___ 1. YES

Appendix D:

Measure of Effective Contraceptive Use

Measure of Effective Contraceptive Use

Study ID# _____

D1. Did you use <u>any</u> method of birth control the last time that you had intercourse?

0. No *(Score 0)* 1. Yes *(Score 2)* 2. Not Sure *(Score 0)*

D2. ***Consistency of contraceptive use*** *(score /6; b/a = consistency of contraceptive use)*

a) How many times have you had intercourse (sex) during the past 30 days? _____

b) Of all of the times you had intercourse (sex) during the past 30 days, how many times did you actually use or do something to prevent pregnancy? _____

Hardly at all (1-19%)	*(score 1)*	*Most of the time (60-79%)*	*(score 4)*
A small part of the time (20-39%)	*(score 2)*	*Almost all of the time (80-99%)*	*(score 5)*
About ½ of the time (40-59%)	*(score 3)*	*All of the time (100%)*	*(score 6)*

D3. ***Method Specific Score*** *(score /2)*

What <u>MAIN</u> method of birth control are you using now? *(Circle ONLY ONE)*

1. **NONE** *(score 0)*
2. **ABSTINENCE** *(score 2 if abstaining from intercourse to avoid pregnancy)*
3. **ORAL CONTRACEPTIVES:**
   a) How many times have you missed pills in the past 30 days? ____ 0. > ONE TIME
   ____ 1. ≤ ONE TIME
   b) Did you <u>always</u> use a backup method of contraception if you missed pills, were on antibiotics or if you had vomiting or diarrhea? ____ 0. NO
   ____ 1. YES
4. **DEPO PROVERA:**
   Injections <14 weeks apart? ____0. NO *(score 0)* ____ 1. YES *(score 2)*
5. **NORPLANT:**
   Implant in place? ____ *(score 2)*
6. **CONDOMS/SPERMICIDE:**
   a) Do you use condoms <u>every time</u> you have intercourse? ____ 0. NO ____ 1. YES
   b) Do you <u>always</u> use condoms with foam or other spermicide (sponge, diaphragm)?
   ____ 0. NO ____ 1. YES
7. **I.U.C.D.:**
   a) I.U.C.D. in place? ____ *(score 1)*
   b) Did you have your I.U.C.D. checked one month after insertion? ____ 0. NO
   ____ 1. YES

Appendix E:

In-Person Contacts with Potential Participants

Nurse's In-Person Contact with Potential Participants

Margaret Kozlowski is a Master of Nursing student at the University of Manitoba. She is conducting a study about contraception (birth control) experiences for teenage women who have had a baby. Can I give her your name so she can talk with you about the study and you can then decide if you want to participate? *If the potential subject agrees, the researcher will then approach her and explain the study.*

Researcher's In-Person Contact with Potential Participants in Ambulatory Care

Hello, my name is Margaret Kozlowski. I am a Master of Nursing student at the University of Manitoba. I am doing a study about contraception (birth control) experiences of teenage women who have had a baby in the past year. Would you be willing to read this written explanation about the study? *If the potential subject agrees, she will be given the "Invitation to Participate" to read and will have the opportunity to ask questions.*

Do you have any questions about the study? Would you be willing to participate in the study? *If the potential subject agrees to participate, informed consent will be obtained. If the young woman declines, the researcher will thank her and contact with her will end.*

Researcher's In-Person Contact with Potential Participants on the Postpartum Unit

Hello, my name is Margaret Kozlowski. I am a Master of Nursing Student at the University of Manitoba. I am doing a study about contraception (birth control) experiences of teenage women who have had a baby. Would you be willing to read this written explanation of the study? *If the potential subject agrees, she will be given the "Invitation to Participate" to read and will have an opportunity to ask questions.* I am wondering if you would allow me to contact you in about three months' time to explain the study again and you can decide at that time if you want to participate. *If the young woman agrees, she will be asked for her phone number and address and will be contacted by the researcher or research assistant to request her participation.*

Appendix F:

Invitation to Participate

Invitation to Participate

Dear New Mother:

You are invited to participate in a research project about young mothers' experience with contraceptive (birth control) use in the first year after giving birth. The purpose of the study is to discover the factors that influence young mothers' decisions about and use of birth control. The information that you give may help us in the future to find ways to help young mothers with birth control concerns after childbirth.

If you agree to participate in the study, the researcher will ask you questions in order to complete four questionnaires with you. This will take about 20 to 30 minutes of your time. There are no right or wrong answers on these questionnaires. We are interested in your personal experience with contraception since you had your baby and in your opinions and feelings. You may decide not to answer some of the questions if you are not comfortable to do so. If, during the course of the study, the researcher discovers that either you or your child is a victim of abuse, she may be required to report it.

You are not required to participate and you may decide not to complete the study. You may decide to withdraw from the study and it will not affect the health care you receive. Your name will not be placed on any of the questionnaires and there will be no way to identify any of the participants in the study. The questionnaires will be stored in a locked filing cabinet and only the investigator, her thesis supervisors and the statistician will be allowed to look at them. No one else will have access to the information on the questionnaires.

The results of the study will be reported as group information and not as individual answers. Therefore, no one will know how you answered the questions. The results may be published in a journal article. A report of the study results will be sent to participants who would like it.

Thank you for considering being a participant in this study. Please contact us if you have any questions about participating.

Margaret Kozlowski RN, BN
Graduate Student
Faculty of Nursing
University of Manitoba
Phone:

Dr. Annette Gupton
Faculty of Nursing
University of Manitoba
Phone: (204) 474-7135

Appendix G:

Consent to Participate in a Research Study

- Health Sciences Centre
- St. Boniface Hospital

Study ID#_____

Consent to Participate in a Research Study (Health Sciences)

In signing this consent form, I am giving my consent to take part in a study about young women's experience of contraception (birth control) after delivering a baby. I understand that I will answer the questions on four questionnaires with the help of the researcher and this will take about 20 to 30 minutes. I am aware that the results of this study will be used to gain a better understanding about teenage mothers' experiences with contraception after delivery and will be used to help nurses to better meet these young women's birth control needs.

I have received a written explanation about the study and I understand what is involved. The researcher has answered all of my questions. I understand that my decision to participate is voluntary and I can decide to withdraw from the study at any time. I can refuse to answer any of the questions on the questionnaires. I understand that if I decide to withdraw, it will not affect the care that I receive in any way. I have been told that my answers to questions will not be given to anyone other than the investigator, her thesis committee and the statistician and that no reports of this study will ever identify me in any way. I am aware that if it is discovered during the course of the study that my child or I is a victim of abuse, the researcher may be required to report it.

If I have questions about the study or about my participation, I can contact the investigator (Margaret Kozlowski) by calling her at . I understand that I can also contact her advisor, Annette Gupton RN, PhD (ph. 474-7135). I understand that the researcher has received approval for this study from the Faculty of Nursing Ethical Review Committee, the St. Boniface General Hospital and the Health Sciences Center.

My signature below indicates that I am informed about the study and I am volunteering to participate.

Date _____ _____

Participants Signature

Date _____ _____

Investigator's Signature

If you would like to have a summary of the results of this study sent to you, please give your name and address below.

Name: _____

Address:

_____

_____

_____

Study ID#_____

Consent to Participate in a Research Study (St. Boniface)

In signing this consent form, I am giving my consent to take part in a study about young women's experience of contraception (birth control) after delivering a baby. I understand that I will answer the questions on four questionnaires with the help of the researcher and this will take about 20 to 30 minutes. I am aware that the results of this study will be used to gain a better understanding about teenage mothers' experiences with contraception after delivery and will be used to help nurses to better meet these young women's birth control needs.

I have received a written explanation about the study and I understand what is involved. The researcher has answered all of my questions. I understand that my decision to participate is voluntary and I can decide to withdraw from the study at any time. I can refuse to answer any of the questions on the questionnaires. I understand that if I decide to withdraw, it will not affect the care that I receive in any way. I have been told that my answers to questions will not be given to anyone other than the investigator, her thesis committee and the statistician and that no reports of this study will ever identify me in any way. I am aware that if it is discovered during the course of the study that my child or I is a victim of abuse, the researcher may be required to report it.

If I have questions about the study or about my participation, I can contact the investigator (Margaret Kozlowski) by calling her at . I understand that I can also contact her advisor, Annette Gupton RN, PhD (ph. 474-7135). If I have questions about my rights as a research subject, I can contact the Patient Relations officer at the St. Boniface Hospital, Ms. Lorraine Bisson (ph.). I understand that the researcher has received approval for this study from the Faculty of Nursing Ethical Review Committee, the St. Boniface General Hospital and the Health Sciences Center.

My signature below indicates that I am informed about the study and I am volunteering to participate.

Date _____ _____

Participants Signature

Date _____ _____

Investigator's Signature

If you would like to have a summary of the results of this study sent to you, please give your name and address below.

Name: _____

Address:

_____

_____

_____

Appendix H:

Ethics Approval

University of Manitoba, Faculty of Nursing

The University of Manitoba

FACULTY OF NURSING
ETHICAL REVIEW COMMITTEE

APPROVAL FORM

Proposal Number #99/43

Proposal Title: "Factors Associated With Effective Contraceptive Use in Post-Partum Women"

Name and Title of Researcher(s): Margaret Kozlowski

Date of Review: December 13, 1999

APPROVED BY THE COMMITTEE: January 12, 2000

Comments: With changes and clarification in your letter of January 7, 2000.

Date: January 12, 2000

Susan McClement, Associate Chair

NOTE:
Any significant changes in the proposal should be reported to the Chairperson for the Ethical Review Committee's consideration, in advance of implementation of such changes.

Appendix I:

Permission to Use the

Prenatal Psychosocial Profile: Psychosocial Assessment Tool

SCHOOL OF NURSING OHSU

ASHLAND • KLAMATH FALLS • LA GRANDE • PORTLAND

OREGON HEALTH
SCIENCES UNIVERSITY

PORTLAND CAMPUS

3181 S.W. SAM JACKSON PARK RD.
PORTLAND, OR 97201-3098
503-494-7100

July 30, 1999

Margaret Kozlowski

R
Canada

Dear Margaret:

Thank you for your interest in the Prenatal Psychosocial Profile (PPP). I have enclosed a copy of the instrument, a copy of the smiling faces we used for eliciting responses, and a copy of the final report for the Low Birthweight study. The latter includes more information about the PPP scores of study participants. It also includes information that is probably not as applicable to your interests.

The PPP is very easy to administer and score. It has been read as well as given to women to self-complete. It has also been used in telephone interviews. It takes about 5 minutes to read all the questions. Each scale can be quickly scored. Both the stress and support scales are scored as written, with higher scores indicating higher stress and higher support. Six items on the self-esteem scale need to be reverse scored so that high scores indicate higher self-esteem. These items are: 20A, 20B, 20D, 20F, 20G, & 20K.

My only request if you decide to use the PPP is that you send me a copy of your final results. I you would like further information or would like to talk with me about the instrument, please feel free to call or email me. My phone is and my email is:

Best wishes.

Sincerely,

Mary Ann Curry, RN, DNSc, FAAN
Grace Phelps Distinguished Professor

Appendix J:

Facility Access Approval

- St. Boniface General Hospital
- Health Sciences Centre

Health
Sciences
Centre
THE UNIVERSITY OF MANITOBA
Faculty of Medicine

St-Boniface
General Hospital

HEALTH SCIENCES CENTRE
Arthritis Centre
RR 149-800 Sherbrook Street
Winnipeg, MB, Canada
R3A 1M4

(204) 787-2208 (HSC Office)
(204) 787-1920 (Fax)
(204) 787-2392 (Appointments)

Department of Medicine
Dr H El-Gabalawy, Director
Dr IM Chalmers
Dr JMG Canvin
Dr C Peschken

Department of Pediatrics
and Child Health
Dr K Oen
(204) 787-2020

January 26, 2000

Margaret Kozlowski, RN, BN

MB
R

Re: "RI99:184 "Factors associated with effective contraceptive use in postpartum adolescents."

Dear Margaret Kozlowski:

The above study was reviewed by the Pediatric Research Coordinating Committee on January 10th, and has been approved.

Please inform the Pediatric Research Coordinating Committee of the dates data collection is started and completed (at time of completion).

Thank you.

Yours truly,

Kiem G. Oen, MD, FRCPC
Chairperson
Pediatric Research Coordinating Committee

KGO:jc

c.c. File
Dr. L. Oppenheimer

Health Sciences Centre

OFFICE OF THE DIRECTOR OF RESEARCH

MS7 - 820 SHERBROOK STREET
WINNIPEG, MANITOBA R3A 1R9

DIAL DIRECT (204) 787-4587
FAX (204) 787-4547

MEMORANDUM

DATE: January 26, 2000

TO: Ms M. Kozlowski, Principal Investigator, Box 509, Lorette, MB

FROM: Dr. L. Oppenheimer, Director of Research, MS7

SUBJECT: **PROTOCOL APPROVAL:** FACTORS ASSOCIATED WITH EFFECTIVE CONTRACEPTIVE USE IN POSTPARTUM ADOLESCENTS..

ETHICS #: N#99/43 RIC #: RI99:184

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

If your study is receiving funds and H.S.C. Finance Division will be administering the funds, please contact the H.S.C. Finance Department for a "Specific Purposes Account Application Form".

PLEASE NOTE: **THE SPECIFIC RESEARCH ACCOUNT NUMBER ASSIGNED FOR THIS STUDY, CAN ONLY BE USED FOR THIS PARTICULAR STUDY.**

My sincere best wishes for much success in your study.

cc: Dr. K. Oen, Chairperson, PRCC, RR149
Ms G. Dutchuk, Finance Division, HSC

/ks

interoffice
MEMORANDUM

Local: 3266 Fax: 231-0891

TO: Ms. Margaret Kozlowski
St. Boniface General Hospital

FROM: Dr. J. Foerster
Chairperson, Research Review Committee

DATE: December 17, 1999

SUBJECT: **Experimental Protocol Submission**

This is to inform you that the Research Review Committee, at its meeting held on December 15, 1999, reviewed the protocol titled "Factors Associated with Effective Contraceptive use in Postpartum Adolescents", Ref # RRC/99/0082.

The Committee made the following recommendations:

i) That the signature of the Program Director be obtained and forwarded to the Committee upon receipt;
ii) That page 30 of the Patient Consent Form be amended to clarify abuse, ie: whether it means abuse to the teenage mother or the baby;
iii) That page 7 of the Patient Consent Form regarding the duration of the study be deleted as the Committee felt that the allotted time noted was not relevant;
iv) That any significant changes in your proposal must be submitted to the Research Review Committee prior to implementation;
v) That you sign an SBGH Pledge of Confidentiality prior to commencement of the study;
vi) That you contact Noelie Laverge, Program Team Manager, with regard to the logistics of screening potential subjects and the recruitment process;
vii) That in keeping with the SBGH Catholic faith, no counseling, direction or recommendations be given to participants in this study concerning abortion or abortifacients;
viii) That you contact Ms. A. Lemieux, Research & Evaluation Consultant (Nursing & Allied Health) at 204-235-3667 with any questions or concerns or if you encounter any site-related difficulties during the course of your study; and
ix) That upon completion of your study, you forward a brief summary of your final report.

The Committee approved the study and it may now be implemented contingent upon a response to the above provisos.

Please be advised that you may be called upon to make a presentation to Hospital Staff about your research at the (Nursing & Allied Health) Brown Bag Research Luncheons held monthly.

Please be advised that copies of the protocols which have been approved **must be retained by the physician** doing the protocol for **at least two years** after the study is completed. The protocol must be kept for a longer term if it is anticipated that there will be a long-term effect.

JF/clr

cc: Ms. A. Lemieux, Research & Evaluation Consultant
Dr. L. Grant, Clinical Director - Woman and Child Program
Ms. K. Neufeld, Director - Quality & Professional Services and CNO
Ms. T. Benoit, Program Director - Woman and Child Program
Dr. I. Ripstein, President of the Medical Staff
Ms. H. Milan, Head - Pharmacy Department
Ms. D. Halhead, Finance Department