8-1-1998

Factors Influences Adolescents' Choice And Discontinuation Of Depo-Provera

Carey E. McCarter
Mississippi University for Women

FACTORS INFLUENCING ADOLESCENTS' CHOICE AND DISCONTINUATION OF DEPO-PROVERA

by

CAREY E. McCARTER

A Thesis
Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Nursing
in the Division of Nursing
Mississippi University for Women

COLUMBUS, MISSISSIPPI

August 1998

Factors Influencing Adolescents' Choice

and Discontinuance of Depo-Provera

by

Carey E. McCarter

Bonnie E. Jackson
Professor of Nursing
Director of Thesis

Linda Pullen
Professor of Nursing
Member of Committee

Assistant Professor of Nursing
Member of Committee

Barbara Moore
Director of the Graduate School

Abstract

Long-term contraceptives are a needed measure for prevention of unintended pregnancies. Depot medroxyprogesterone acetate (Depo-Provera), a long-term injectable contraceptive, is particularly useful for adolescent women. Despite the widespread use of Depo-Provera, limited data exist in the literature on continuation rates, especially among adolescents. The purpose of this descriptive study was to determine the factors which influence the choice and discontinuation of Depo-Provera among adolescents. The Health Belief Model served as the theoretical framework to guide this study. The convenience sample consisted of adolescent females (N = 14). The instrument utilized for the collection of data was the McCarter Depo-Provera Questionnaire. Responses to the instrument were analyzed using frequency distributions and percentages. The majority of the adolescents (93%) in this study were satisfied with Depo-Provera. Most of the subjects (86%) chose Depo-Provera because they only had to remember to get an injection every 3 months. Only 2

subjects discontinued use of Depo-Provera and attributed discontinuation to physical and menstrual symptoms. Conclusions derived from the findings of this study were that the majority of the adolescents had used another method of birth control, almost half of the adolescents had been pregnant, and most of the adolescents had used Depo-Provera for 12 months or longer. Recommendations for future research are replication of the study with a larger, more diverse sample, replication of the study without parental consent for participation in the study if not required for administration of Depo-Provera, and conduction of research to include past sexual history and educational level.

Acknowledgments

This past year has been quite a challenge. The graduate faculty has been very supportive, both emotionally and mentally. I would like to thank each member of the faculty for all their support and encouragement. My family, friends, coworkers, and classmates have all contributed to my completion of this graduate program.

I would like to thank my committee members, Dr. Bonnie Lockard, Dr. Linda Sullivan, and Jessica Alexander, for all their comments and suggestions which made the completion of this thesis a reality. To my committee chair, Dr. Bonnie Lockard, thank you for all your kind words, for having faith in my abilities, and for all your encouragement. To Dr. Linda Sullivan, thank you for your suggestion for the topic of this thesis and for your contribution of knowledge about Depo-Provera. To Jessica Alexander, thank you for your support and for your contribution of knowledge about adolescent females. Again,

I thank each of you for all the time spent reading and making suggestions to better this thesis.

I want to thank each of my coworkers in PACU at Baptist Memorial Hospital-Golden Triangle for all of their support throughout this past year. Thank you for being understanding when I needed a day off to finish an assignment or needed someone to cover my call. A thank you to all those friends at the hospital who merely took the time to ask how things were going and were really interested in the answer. A special thanks to Dr. Stephen Bosenberry for his words of encouragement, for his emotional support, for his help with my presentations and contribution to my thesis, and for his friendship.

To all my friends, thank you for being there for me. Thank you for understanding my crazy schedule, for encouraging me to "get in those books and study," and for telling me to hang in there because you knew I could do this. Ricky, Kim, and Tori Elmore, thank you for your love, support, and all the home-cooked meals.

Ray, thank you for your love, encouraging words, and helping to take care of my animals and me, too, at times.

To my family, whom I love dearly, thank you the most for being put on hold and understanding. Thank you for understanding when I only had time to run in and stay for a few minutes or when I could not spend as much time with you as we all would have liked.

Thank you, Grandmother, for your encouragement over the years.

To Suzan and Christopher, now we will have plenty of time to go shopping and antiquing or whatever you two would like to do. Suzan, thanks for your help in preparing for tests, especially comps--your help really made the difference.

Daddy, you are a wonderful father! Thank you for all your support--both emotional and financial.

Mama, you, too, are a wonderful mother. Mama, you are my rock. Thank you for encouraging me to pursue this degree. Thank you for always prodding me on to better myself and for your words of encouragement along the way. I thank God that he has given me such a great family. I love you all more than you could ever know!

Thank you, Dear Lord, for giving me the courage and the faith to follow through with this pursuit.

Table of Contents

List of Tables

Chapter I

The Research Problem

The United States has the highest rate of adolescent pregnancy among industrialized countries (Spitz et al., 1996). Adolescent pregnancy is a national dilemma that transcends the boundaries of socioeconomic class, race, and ethnicity. Adolescent motherhood has negative consequences for mother and child ("Teen Pregnancy," 1997). Nearly 60% of all pregnancies in the United States are unintended and almost one half of these occurred because contraception failed or was not used properly (Marble, 1996). Long-term contraceptives are a needed measure for prevention of unintended pregnancies. Access to effective long-term contraception should be available to every woman for prevention of unintended pregnancy, particularly the adolescent. This study will explore why adolescents choose and discontinue long-term contraception with depot medroxyprogesterone acetate (Depo-Provera).

Establishment of the Problem

Young girls who become pregnant are more likely to be poor and have limited future possibilities because 70% of teenage mothers drop out of high school ("Teen Pregnancy," 1997). These adolescents are more likely to have more children, spend more time as a single parent, and rely more heavily on public assistance than those teens who do not have children. Pregnant teens are more likely to have medical problems during their pregnancy and are less likely to seek prenatal care. The children born to teenage mothers face many obstacles. Studies have shown that these children are likely to do worse in school, have poorer health yet receive less health care, are more likely to be incarcerated, and have higher rates of adolescent childbearing themselves ("Teen Pregnancy," 1997).

Although there are a number of contraceptive options available to adolescents, many adolescents may be uninformed about contraceptive choices despite receiving sex education in school. Studies have shown that 50% of teenage pregnancies occur within 6 months of first sexual intercourse and 20% of pregnancies occur within the first month (Moriarty, 1997). Some of the available

contraceptive methods include condoms, spermicides, oral contraceptive pills, Depo-Provera injections, and the Norplant system.

Depo-Provera is an injectable contraceptive which was approved for use in the United States in late 1992. It has been used worldwide for more than 20 years. This hormonal injection provides contraceptive protection for up to 3 months. The contraceptive efficacy of Depo-Provera has been well established with an expected failure rate of only 0.3% (Moriarty, 1997). Depo-Provera is a reasonably affordable method at a cost of approximately $30 to $40 per injection. Depo-Provera is a particularly useful method for adolescent women who are typically inconsistent users of coital-dependent methods or methods which require daily use. Often adolescents who are sexually active and started on Depo-Provera fail to return at the required 3-month intervals for continued protection from unwanted pregnancies. Little has been documented about the reasons for adolescents' choice of Depo-Provera as a contraceptive and the factors which account for discontinuation of Depo-Provera. The purpose of this study was to determine the factors which influence adolescents' choice of Depo-

Provera and discontinuation of Depo-Provera among adolescents.

After reviewing a number of research studies about Depo-Provera, Kaunitz (1994) concluded that contraception with Depo-Provera may be ideal for women seeking highly effective birth control but who experience problems with other reversible methods. In reviewing the literature Kaunitz found that some women selected Depo-Provera because they had (a) difficulty remembering to take oral contraceptive pills daily, (b) experienced compliance problems with barrier methods, (c) preferred the convenience of one injection every 3 months, (d) developed estrogen-related side effects when taking oral contraceptives, or (e) required the privacy associated with Depo-Provera use--no one other than the administering health care provider knew that the drug was being used. Other women chose Depo-Provera because medical factors precluded the use of estrogen-containing oral contraceptive agents or because use of concomitant medications could possibly reduce the efficacy of oral or implantable contraception. The third group of women, for whom pregnancy posed unacceptable fetal or maternal risks, selected Depo-Provera because of its extremely high

contraceptive efficacy. Kaunitz (1994) recommended patient education and counseling to minimize Depo-Provera use in inappropriate candidates, such as women not willing to tolerate menstrual changes, women who may wish to conceive in the next 1 to 2 years, and those unable or unwilling to return every 3 months for repeat injections.

Pinkston-Koenig and Miller (1995) conducted a study that sought to determine the prevalence of, indications for, and problems associated with the use of Depo-Provera in adolescents. They found that less than half of the physicians who responded to questionnaires (N = 616) offered Depo-Provera as a contraceptive option to adolescents.

Problems related to irregular bleeding were involved with discontinuation. Little is known about the use of and problems with the use of Depo-Provera in adolescents. Future investigations into short-term potential problems, such as weight gain or mood changes, and long-term potential problems, such as osteoporosis, were cited as areas for future studies by Pinkston-Koenig and Miller.

Harel, Biro, Kollar, and Rauh (1996) concluded that discontinuation of Depo-Provera and Norplant among adolescents was largely the result of irregular menstrual

bleeding and weight gain. Counseling about potential side effects should be provided before initiation of these methods and throughout the use of these methods to help increase continuation.

Significance to Nursing

Because adolescent pregnancy is a national problem and has negative consequences for both the adolescent mother and her child, reliable methods of contraception should be available. Although there are many contraceptive choices available to adolescents, many adolescents are often uninformed about contraceptive choices.

Depo-Provera is a very efficacious and cost-effective method of birth control. It is particularly useful for adolescent women who are typically inconsistent users of coital-dependent methods or those which require daily use. Yet often, adolescents who are started on Depo-Provera fail to return at the required 3-month intervals for continued protection from unwanted pregnancies. Information on appointment compliance can alert the health care provider to focus on ways to improve follow-up appointments. Little has been documented about the reasons for adolescents' choice of Depo-Provera as a contraceptive and the factors which account for their discontinuation

with Depo-Provera. Once the factors which account for discontinuation with Depo-Provera are discovered, measures can be taken to increase continuation with this method.

Harel et al. (1996) suggested that counseling about potential side effects be provided before initiation of Depo-Provera and throughout the use of this drug to help increase continuation with this method. By discovering the factors that influence adolescents' discontinuation with Depo-Provera, health care providers can counsel them on the potential for these factors and possibly increase continuation with this method. By anticipating, counseling, and attempting to prevent physical problems associated with the use of Depo-Provera, the health care provider may be able to increase adolescents' continuation with this method. The health care provider should also make an effort to increase the use of a barrier method in adolescents to prevent sexually transmitted diseases. When discontinuation is requested, the health care provider should expedite the use of a new contraceptive method in an attempt to reduce the high pregnancy rate observed among adolescents after discontinuation of Depo-Provera.

Theoretical Framework

The Health Belief Model will provide the theoretical framework for this study because sociopsychological variables are used in the explanation of preventive health behavior. An individual's motivation to act is considered a function of the expectancy of goal attainment in the area of health behavior. The Health Belief Model is concerned with the subjective world of the acting individual. The assumptions of this theory are as follows:

> . . . in order for an individual to take action to avoid a disease, he would need to believe that he was personally susceptible to the disease, that the occurrence of the disease would at least have moderate severity on some component of his life, and that taking a particular action would in fact be beneficial by reducing his susceptibility to the condition or, if the disease occurred, by reducing its severity, and that it would not entail overcoming important psychological barriers such as cost, convenience, pain, and embarrassment. (Becker, 19974, p. 3)

The Health Belief Model has been shown by current research to be a value expectancy approach to explaining and predicting health behaviors that go beyond straight information giving. This approach can be used to intervene in encouraging contraceptive use among teenagers. Because contraceptive action involves a preventive health decision followed by correct and consistent use, the model may have

useful applications to both the prevention and compliance aspects of contraceptive behavior (Zellman, 1984). Individual perceptions of adolescents related to their perceived susceptibility to pregnancy are important. Modifying factors include the adolescents' knowledge about pregnancy prevention, the types of contraceptives, the availability of contraceptives, and the consequences of pregnancy. The likelihood of action includes the adolescents' perceived benefits of a long-acting contraception as well as perceived side effects with the use of this type of contraceptive.

Assumptions

The following assumptions were made for this study:

1. Participants will respond honestly to all items on the McCarter Depo-Provera Questionnaire.

2. Adolescents use contraception to prevent pregnancies.

3. Adolescents' actions to discontinue Depo-Provera as a contraception is based on a perceived benefit/side effect evaluation.

Purpose of the Study

The purpose of this study was to determine the factors which influence the choice of and discontinuation of Depo-Provera among adolescents.

Statement of the Problem

According to Spitz et al. (1996), pregnancy and birth rates among teenage girls in the United States are the highest of any developing country. There were 95.9 pregnancies per 1,000 teenage girls between the ages of 15 and 19 years by 1990 which reflected a 9% increase over the last half of the decade (Spitz et al., 1996). A number of contraceptive options are available to adolescents. Some of the available methods include condoms, spermicides, oral contraceptive pills, Depo-Provera injections, and the Norplant system. Depo-Provera has been introduced as a means for long-term contraception. Yet adolescents who are sexually active and started on Depo-Provera often fail to return at the required 3-month intervals for continued protection from unwanted pregnancies. Little has been documented about the reasons for adolescents' choice of contraceptives and the factors which account for their discontinuation with Depo-Provera. The purpose of this study was to determine the factors

which influence choice of and discontinuation of Depo-Provera among adolescents.

Research Questions

The two research questions answered as a result of this study were as follows:

1. What are the factors identified by adolescents that influence the choice of Depo-Provera as a contraceptive method?

2. What are the factors identified by adolescents that influence discontinuation of Depo-Provera as a contraceptive method?

Definition of Terms

For the purpose of this study, the following terms were defined:

Factors: the perceived reasons for choosing Depo-Provera as a contraceptive and for discontinuation of Depo-Provera as identified on the McCarter Depo-Provera Questionnaire.

Choice of Depo-Provera: decision by females between the ages of 13 and 20 years to use Depo Provera as a contraceptive method.

Discontinuation of Depo-Provera: failure to return on the prescribed date for intramuscular injection of Depo-Provera.

Adolescents: females between the ages of 13 and 20 years who seek contraception with Depo-Provera.

Chapter II

Review of the Literature

A review of the literature revealed some information about the reasons adolescents choose and discontinue Depo-Provera. Many of the adolescents who chose Depo-Provera did so because of ease of use, cost, privacy, and dissatisfaction with oral contraceptive pills. The literature indicated that the majority of adolescents who discontinue Depo-Provera do so because of perceived adverse side effects. Some of the adverse side effects cited in the review of the literature included weight gain, irregular menstrual cycles, headaches, and mood swings.

Cromer, Smith, Blair, Dwyer, and Brown (1994) conducted a prospective study to examine adolescents' contraceptive choices between long-term contraceptives, either levonorgestrel implant (Norplant) or medroxyprogesterone acetate (Depo-Provera), and a combined oral contraceptive pill (OCP). The researchers established a baseline of physical signs and symptoms present before

use of the chosen contraceptive form in order to compare these variables among the different groups on a longitudinal basis. Cromer et al. (1994) also measured perceived satisfaction and continuation rates among the users of the different forms of contraception.

The subjects of this study (N = 199) were adolescent females between the ages of 11 and 20 years who desired contraception. Each subject selected a contraceptive method of choice, with 38% selecting OCP, 33% selecting Depo-Provera, and 29% selecting Norplant. The subject groups ranged in age from 15.2 to 15.7 years. Socioeconomic status was generally low, with Hollingshead scores ranging from 23 + 11 to 26 + 14.5. Of the three study groups, 63% to 67% were African-American; the remaining participants were Caucasian. Of the 199 participants, 27% had been pregnant previously, 24% were teen parents, and 9% previously had abortions. Of those who had pregnancy histories, 68% reported prior use of a birth control method, as compared with 33% of the remaining girls who had never been pregnant ($\chi^2 = 18.36$, $p < .01$). Data were obtained initially and on follow-up visits at 3 months and 6 months after entering into the

study and beginning a regime on the chosen form of contraception. Cromer et al. (1994) obtained data through an interview and physical examination.

The baseline of physical signs and symptoms was established before beginning the study in order to accurately determine the signs and symptoms caused by the use of one of the three contraceptive forms. Gynecological symptoms surveyed before beginning the study were dysuria, vaginal discharge, vaginal itch, pelvic pain, and menstrual history. The prevalence of sexually transmitted diseases (STDs) was also evaluated.

Medical symptoms which have been associated with progestin or estrogen therapy were also reviewed to establish a baseline. These symptoms included depression, fatigue, headache, dizziness, and nausea. Physical examination characteristics recorded were mean blood pressure, facial acne, previous use of a birth control method, and previous reproductive experiences.

The methods of analysis included means and standard deviations for the descriptive data as well as χ^2 analysis and t tests for inferential comparisons. Changes in occurrence rates of medical and gynecologic symptoms before and after initiation of treatment were assessed by

the use of McNemar's test on data obtained from those subjects who returned for follow-up.

In the baseline findings of the gynecological symptoms, Cromer et al. (1994) found no significant difference in complaints of dysuria, vaginal discharge, vaginal itch, pelvic pain, and menstrual history among the three groups. The prevalence of STDs in the group who chose Depo-Provera was higher than in those who chose Norplant or the OCP. No significant differences in the frequency of complaints of depression, fatigue, headache, dizziness, and nausea were found among the three groups. There were no significant differences among the three groups on mean blood pressure or facial acne. The group who chose Depo-Provera was significantly more likely to have used some other form of contraception in the past. Those who chose either Norplant or Depo-Provera were significantly more likely to have had a reproductive experience.

At the end of 3 months, 105 adolescents (Depo-Provera, n = 38; Norplant, n = 40; OCP, n = 27) remained in the study, and at the end of 6 months 40 adolescents, evenly distributed across the three groups, remained in the study. Over 80% of those treated with either Norplant

or Depo-Provera had experienced irregular menstrual bleeding. Of those who received Depo-Provera, 34% were amenorrheic by the end of 3 months, and 60% were amenorrheic by the end of 6 months. About one third of the Norplant users were amenorrheic at the end of 3 months with no increase in this percentage at the end of 6 months. Irregular bleeding in the Depo-Provera users decreased by the end of the 6-month period. Of the Norplant users, irregular bleeding occurred in about one third of the users at the end of 3 months and remained stable at the end of 6 months. Of the adolescents who used the OCP, almost 90% experienced regular cycles.

In comparing the gynecologic and medical symptoms, only those who returned for follow-up assessments provided data for analysis. Cromer et al. (1994) found no significant changes in gynecological symptoms, such as vaginal discharge, dysuria, vaginal itch, or pelvic pain, from the baseline to the follow-up. More of the girls taking Depo-Provera (n = 4, 10%) and Norplant (n = 5, 12%) as compared with those taking the OCP (n = 2, 7%) had occurrences of sexually transmitted diseases at the end of the 3-month follow-up.

Medical symptoms reviewed showed the most common complaints among the three groups were depression, headache, and fatigue, which were reported more frequently among those using Depo-Provera. These results revealed no increase in the frequency of complaints related to depression, headache, dizziness, or nausea among the three groups after initiation of treatment than before initiation of treatment. Results of the physical examination characteristics showed no significant differences among the users of the three forms of contraceptives at the 3-month follow-up and at the 6-month follow-up.

Compliance with appointments also was calculated among the three groups. Appointment compliance was defined as the appearance in the clinic within 2 weeks of a scheduled appointment without prompting. Compliance with appointments at the 3-month follow-up was highest among the Depo-Provera users (66%), followed by the OCP users (51%), and the Norplant users (49%). At the end of the 6-month follow-up the Depo-Provera users (78%) remained the most compliant group compared with those using Norplant (40%) or the OCP (46%) ($\chi^2 = 12.23$, $p < .01$).

Cromer et al. (1994) found that Norplant and Depo-Provera are very popular contraceptives for adolescent females, especially among those who have used other forms of contraception or have had reproductive experiences. The researchers stressed the importance of a baseline evaluation of signs and symptoms is important to have before initiation of therapy in order to better evaluate reported signs and symptoms after initiation of therapy. Users of Norplant are more likely to experience the side effects of nausea and dizziness, whereas Depo-Provera users are more likely to experience amenorrhea and fatigue. Another finding was that interventions are needed to encourage compliance with follow-up appointments in those using Norplant and OCP. Cromer et al. (1994) recommended that a similar study be conducted on adolescents who require confidentiality to determine variables that may impact decision making on those adolescents without parental guidance.

In another descriptive study conducted by Freda et al. (1996), women's responses to Depo-Provera were assessed. The population consisted largely of Medicaid recipients served by the inner-city facility. Seventy-two women who had received the contraceptive in the facility

were asked a series of questions, including why they chose Depo-Provera, the side effects they experienced, if they intended to continue its use, and what they would tell a friend about Depo-Provera. Freda et al. (1996) hoped to better educate other women by learning how women feel about this birth control option.

Women who had received at least one injection of Depo-Provera in the facility were contacted and interviewed by telephone, using a demographic form and a 14-item questionnaire. The following demographic data were obtained: age, race, education, insurance, and marital status. Sixty-three percent of the final sample (n = 72) were Hispanic, 29% were black, and 8% were white. The mean educational level was 11.4 years of completed education. The mean age was 27.7 years. Seventy-seven percent of the sample were on Medicaid, 13% self-paid, and 10% used private insurance to pay for their birth control method. Sixty percent of the sample were unmarried.

The questionnaire contained questions pertaining to the following information: (a) the three main things the interviewee would tell another woman about Depo-Provera, (b) reason for choosing Depo-Provera, (c) satisfaction with Depo-Provera as a method of birth control, (d)

satisfaction with the information received from the doctors or nurses before the first injection, (e) use of condoms since using Depo-Provera, (f) number of sexual partners in the past 6 months, (g) symptoms considered by the user to be side effects of Depo-Provera, (h) whether the interviewee planned to have another Depo-Provera injection, (i) length of time planned to use Depo-Provera, and (j) whether the interviewee planned to become pregnant again. The respondents in this study were mostly Hispanic (63%) and unmarried (60%). At the time of the interview, 35% had received only one injection and 33% had received two injections. Eighteen percent had three, and 14% had four injections.

Freda et al. (1996) found that dissatisfaction with oral contraceptives was the typical reason given for choosing Depo-Provera. Ninety-three percent of the women were satisfied with the information they received before their first injection. Eighteen percent thought that the injectable contraceptive prevented STDs, and 56% reported that they never used condoms since using Depo-Provera.

Of the women interviewed, the majority (78%) expressed satisfaction with the method and 64% planned to continue its use. A scheduled tubal ligation was the most

common reason provided for termination of Depo-Provera. Sixty-five percent of the respondents experienced side effects. Amenorrhea, followed by headaches, hair loss, irregular periods, and heavy bleeding were the most commonly reported side effects of Depo-Provera.

Women offered multiple responses as to why they chose this method. Twenty-five percent of the women reported forgetting to take the pills as their reason for choosing Depo-Provera, which was the most common reason. Other typical reported reasons were "dislike of the pills (20 percent), advice from a doctor or midwife to try Depo-Provera (18 percent), the ease and perceived safety of the method (18 percent), and the fact that it is used every three months (12 percent)" (p. 185). Five respondents reported that they had used Depo-Provera in different countries and wanted to use it again, and 9 chose to use it while they were breast-feeding.

Freda et al. (1996) found that 78% of the respondents expressed satisfaction with the method, compared to 22% who were not satisfied. The following reasons were given for dissatisfaction: "too much bleeding," "bad headaches," "pimples on my face," "losing my hair," and "gaining

weight" (p. 185). Sixty-five percent planned to have another injection despite the dissatisfaction rate.

When the respondents were asked what they would tell a friend about Depo-Provera, the most common answers to this question were "easy," "safe," "don't have to think about it for three months," "don't have to worry about getting pregnant," "don't get periods all the time," "You could gain weight," and "You might lose some hair." "You can use it while you're breast-feeding" was one woman's response. Unfortunately, 6% responded that "You don't have to use condoms" and 18% reported variations of "It prevents sex diseases" (p. 185).

Freda et al. (1996) discovered that side effects were experienced by 65% of the respondents. The most common side effects were no periods (31%), headaches (27%), hair loss (27%), irregular periods (22%), and heavy bleeding (19%). Satisfaction with patient education given before their first injection was reported by 93% of the women.

Freda et al. (1996) found that the most common reason reported for choosing Depo-Provera was forgetting to take the oral contraceptive pills. Other reasons were dislike of the pills, the ease and perceived safety of Depo-Provera, and the fact that it is needed only every 3

months. The most common reason provided for termination of Depo-Provera was a scheduled tubal ligation. More than half of the respondents experienced side effects, such as amenorrhea, headaches, hair loss, irregular periods, and heavy bleeding. More than three quarters of the respondents expressed satisfaction with the method and planned to continue its use. Unfortunately, 6% responded that condom use was not needed with Depo-Provera use, and 18% reported that Depo-Provera prevents sexually transmitted diseases (Freda et al., 1996).

Pinkston-Koenigs and Miller (1995) sought to determine the prevalence of, indications for, and problems associated with the use of Depo-Provera as a means of contraception among adolescents in the United States. The researchers believed that the primary reason adolescent health care providers hesitated to prescribe Depo-Provera was because its use as a contraceptive had not yet been approved by the Food and Drug Administration (FDA).

The researchers mailed 1,026 questionnaires to physicians in the United States who were members of the Society of Adolescent Medicine, the North American Society of Pediatric and Adolescent Gynecology, and directors of adolescent medicine fellowship programs, but no physician

was surveyed more than once. A follow-up mailing yielded a total response rate of 60% (N = 616). SYSTAT version 5.1 was used for statistical analysis. The demographic characteristics of physicians who prescribed Depo-Provera in their practices were compared using chi-square tests at a p value of < .05.

Demographic results revealed that "25% of the respondents were trained in pediatrics alone, 39% in both pediatrics and adolescent medicine, and 14% in obstetrics and gynecology" (Pinkston-Koenigs & Miller, 1995, p. 348). The remainder of the respondents were educated in either internal medicine, internal medicine with adolescent medicine, family practice, or family practice with adolescent medicine. "The majority of those responding practiced in a teaching hospital (40%) or were in a private practice (29%)" (Pinkston-Koenigs & Miller, 1995, p. 348). The respondents had practiced for a mean of 13.7 years.

Of the respondents, 87% prescribed contraceptives for adolescents and 41% (n = 218) reported prescribing Depo-Provera. No relationship existed between prescribing Depo-Provera while in training and using Depo-Provera in practice ($\chi^2 = 3.0$, $p > .05$). Depo-Provera was more likely

to be prescribed by obstetricians than pediatricians ($p < .01$). Those respondents (59%) who prescribed contraceptives other than Depo-Provera stated that they did not include it because of lack of need in their practice, the absence of FDA approval, or both.

Of those physicians who prescribed Depo-Provera, 36% required their patients to sign informed consent forms. A written protocol for Depo-Provera use was reported by 25%. Twenty-seven percent said that they prescribed Depo-Provera to minors who were not emancipated and without parental consent.

Pinkston-Koenigs and Miller (1995) determined the physicians prescribed Depo-Provera for three groups: exclusively for mentally retarded patients (43%), medical conditions precluding estrogen use as well as mentally retarded patients (24%), and others, e.g., teen mothers, patients with history of poor compliance with other contraceptives.

Those providers who prescribed Depo-Provera followed an average of seven patients, each on Depo-Provera ($SD = 13.8$). Of those followed, 85% continued Depo-Provera use beyond 9 months, and 40% continued its use beyond 21 months. Reasons for patients' discontinuation as reported

by their physicians were menstrual irregularity (22%), loss to follow-up (22%), or both (13%).

Pinkston-Koenigs and Miller (1995) had several unanswered questions. These questions dealt with the use of Depo-Provera in adolescents. One of the questions was to determine if other health care providers, such as nurse practitioners or physician assistants, use Depo-Provera in ways that differ from the physicians surveyed. Determining if physicians not involved in adolescent health care use Depo-Provera was another question posed. Other unanswered questions included determining if there were different indications for Depo-Provera use in adolescents and whether the tolerance for side effects was different in adolescents. The researchers recommend that more research be conducted about the use of Depo-Provera in adolescents.

Pinkston-Koenigs and Miller (1995) concluded that less than half of the physicians who responded to the questionnaires used Depo-Provera as a contraceptive. Problems related to irregular bleeding were involved with discontinuation. Little is known about the use of and problems with the use of Depo-Provera in adolescents. Future investigations into short-term potential problems, such as weight gain or mood changes and long-term

potential problems such as osteoporosis were cited as areas for future studies by the researchers.

In another study, Harel, Biro, Kollar, and Rauh (1996) sought to examine the reasons for adolescents' discontinuation of the long-acting contraceptives, Depo-Provera and Norplant, and to assess their experience after discontinuation of these methods of birth control. Both of these methods are effective, convenient, coitus-independent, and require no daily compliance, which makes them a desirable alternative for the prevention of teenage pregnancy.

Harel et al. (1996) identified a sample of 72 adolescents in a hospital-based adolescent clinic who discontinued one of the long-acting contraceptives. Of this sample, 66 adolescent girls agreed to participate in the survey. Of this group of girls, 35 discontinued use of Depo-Provera (Group 1) and 31 discontinued use of Norplant (Group 2). All participants were counseled via printed material and verbally about contraceptive methods. Each received detailed data on their chosen method. During use of Depo-Provera and Norplant, the girls were assessed every 3 months by their health care provider and throughout the 12 months following discontinuation. The

adolescents were interviewed and a complete physical exam was performed at each follow-up visit. If clinically appropriate, pelvic exams were performed for cultures (gonorrhea and chlamydia) and papanicolaou (pap) smears. At each visit condom use was encouraged and condoms were supplied.

Demographic and psychosocial data, as well as reproductive health and menstrual history, were collected by the health care providers. A 3-point Likert-type scale (very, somewhat, not) was used to report perceived satisfaction and concerns with Depo-Provera and Norplant use. At initiation and at follow-up visits, body mass index (BMI) was calculated. The day of removal for Norplant and 3 months after the last injection of Depo-Provera were determined to be the dates of discontinuation of use for each method. Irregularity of menstrual flow was defined as a flow of greater than 7 days, with an interval of less than 21 days or greater than 35 days, or the presence of intermenstrual spotting. Harel et al. (1996) defined a break in contraceptive use as the use of no method after discontinuation of Depo-Provera or Norplant or adoption of the next method at least one month after

the date of discontinuation. Approval of the study was granted by the institutional review board of the hospital.

Chi-square analysis for categoric variables and student's two-tailed t test for paired and unpaired data, as appropriate, were used for comparisons between and within groups. Fisher hypergeometric function also was used as appropriate. Type I error (α) < .05 was considered significant. Conception rates were calculated cumulatively at monthly intervals. For descriptive data, Harel et al. (1996) expressed the results as the mean ± standard error.

Harel et al. (1996) found that at the initiation of Depo-Provera (Group 1) the average age of the adolescents was 16.5 ± 0.3 years. The average age at initiation of Norplant (Group 2) was 15.8 ± 0.3 years. Seventy percent were African-American and the remainder were Caucasian. Group 1 BMI was 24.2 ± 0.6, and Group 2 BMI was 24.1 ± 0.9. In Group 1, the adolescents were 4.7 ± 0.3 years postmenarchal and 3.4 ± 0.3 years in Group 2 ($p = .002$). Both groups reported that they were sexually active. The mean onset of sexual activity was 14.4 ± 0.2 years in Group 1 and 14.1 ± 0.3 years in Group 2. Both groups reported mean lifetime sexual activity as 8 ± 1. Forty-five percent of the adolescents who chose Norplant had

been pregnant in the past, and 29% of the adolescents had a past history of abortion. Of those who chose Depo-Provera, only 23% had been pregnant in the past, 17% of whom had a past history of abortion.

Of the adolescents who discontinued Depo-Provera, 15% stopped after the first injection, 44% after the second injection, 23% after the third injection, and 18% after the fourth or more injections. Of those who discontinued Norplant, only one was removed in the first 6 months of use, whereas 23% of removals occurred within the first year, 29% in the second year, and 48% in the third year of use.

Harel et al. (1996) found that half (48% of the Depo-Provera users and 52% of the Norplant users) were "somewhat" satisfied with their chosen method. Complete dissatisfaction was expressed by a substantial minority (29% of Depo-Provera users and 35% of the Norplant users). Ninety percent of the adolescents in both groups had discussed their decision to discontinue the method with another person, typically their mother or boyfriend. Only 17% of the parents from both groups of adolescents were reportedly in complete agreement with the decision to discontinue the methods.

Irregular bleeding, weight gain, and mood changes, with no statistical difference between the groups, were the most common reasons for discontinuation of either Depo-Provera or Norplant. Three adolescents from the Depo-Provera users and 5 adolescents from the Norplant users reported desire for pregnancy as their reason for discontinuation. Of these adolescents, two from each group said that their partners influenced their choice because of a desire for pregnancy.

Prior Norplant users had a reestablishment of regular menstrual bleeding significantly earlier ($p = .01$) than those who were prior Depo-Provera users. Eighty-one percent of those who were prior Norplant users resumed regularity during the first month after discontinuation. Of those who had used Depo-Provera, only 50% resumed regularity during the first month after discontinuation. Of those who regained menses, the total duration of menstrual bleeding during the first month after discontinuation was 7.0 ± 2.0 days in the Depo-Provera users and 5.0 ± 2.5 days in the Norplant users. Harel et al. (1996) found no statistical difference in the total days of bleeding between the groups at 2 to 5 months after discontinuation. The probable return to ovulation was

significantly delayed after discontinuation of Depo-Provera compared with adolescents who had previously used Norplant.

The adolescents who discontinued use of Depo-Provera had an increase in BMI of 1.1 ± 0.3 ($p = .0005$) (compared with initiation, paired t test, $p = .0005$). Those adolescents who discontinued Norplant gained 1.3 ± 0.6 in their BMI (compared with initiation, paired t test, $p = .03$. At 6 months after discontinuation of the methods (compared with BMI at discontinuation, paired t test, $p = .01$ in Group 1 [Depo-Provera users], and paired t test, $p = .02$ in Group 2 [Norplant users]) there was a further significant increase in BMI. Harel et al. (1996) found no significant changes in BMI at > 9 months after discontinuation of either method.

Sexual activity immediately after discontinuation of both these methods was reported by 46% of the adolescents using Depo-Provera and 36% of the adolescents using Norplant. Documentation of sexually transmitted infection (STI) occurred in 20% of the adolescents using Depo-Provera and in 20% throughout the follow-up after discontinuation. Nine adolescents using Depo-Provera were documented as having abnormal pap smears (atypia and

squamous intraepithelial lesions), and 2 were documented after discontinuation as having abnormal pap smears. After discontinuation of Norplant, 55% of the adolescents reported no change in sexual interest, 26% reported less interest, and 19% reported greater sexual interest. More frequent sexual intercourse was reported by 48%. After discontinuation, 20% of the adolescents reported consistent condom use, compared with 3% while using Norplant. During their last sexual intercourse only 33% reported condom use. Harel et al. (1996) found of the adolescents who used Norplant, an STI was documented in 64% during Norplant use and 32% during follow-up after discontinuation of the method. Forty-five percent of the adolescents who used Norplant had abnormal Pap smears (atypia and squamous intraepithelial lesions) during use of the method and 10% after discontinuation.

After discontinuation of Depo-Provera or Norplant, only 62% of the adolescents using Depo-Provera and 63% using Norplant utilized a new method with no break in contraceptive practice. Nonpermanent, less effective methods, with the condom being the most popular, were used by 37% of the Depo-Provera users and 23% of the Norplant users. A highly effective method, such as an oral

contraceptive, was used as their next method by only 26% of those who used Depo-Provera and 39% of those who used Norplant. No method of contraception was adopted after discontinuation in 26% of the adolescents in who used Depo-Provera and 19% of those who used Norplant.

During the follow-up after discontinuation, 7 adolescents from Group 1 (Depo-Provera users) and 15 from Group 2 (Norplant users) had conceived ($\chi^2 = 5.96$, $p = .01$). At 12 months after discontinuation, the cumulative conception proportion was significantly higher (Fisher exact test, $p = .01$) among the adolescents who discontinued Norplant. Prenatal care was initiated by the majority of these adolescents during the first trimester.

Only 57% of the adolescents in both groups continued to be satisfied with their decision to stop the methods. Fifty-one percent of those who discontinued Depo-Provera and 39% who discontinued Norplant said that they would like to reinstate their former methods in the future.

Harel et al. (1996) concluded that discontinuation of Depo-Provera and Norplant among adolescents was largely the result of irregular menstrual bleeding and weight gain. Counseling about potential side effects should be provided before initiation of these methods and throughout

the use of these methods to help increase continuation. Health care providers should manage excessive bleeding episodes in an attempt to decrease discontinuation with these methods. Another potential side effect was a delay in the return of ovulatory regular cycles and fertility which may persist for several months after discontinuation with Depo-Provera. Harel et al. (1996) recommended that users of these methods be cautioned that the immediate risk for pregnancy after discontinuation is high. The health care provider should also make an effort to increase the use of a barrier method of contraception in adolescents.

In a similar study, Davidson et al. (1997) conducted a prospective study among poor and minority women designed to investigate rates of Depo-Provera discontinuation and subsequent rates of unprotected intercourse and unintended pregnancy. The study sample consisted of 491 women who were selected from three large hospital-based family planning clinics serving poor and ethnically diverse populations in New York City, Dallas, and Pittsburgh. Eligibility criteria were assessed through a waiting room screening form. The eligibility criteria were as follows: at least 15 years of age, initiating Depo-Provera use, and

having received contraceptive counseling. All women who met the criteria were asked to participate in the study. Interviews were conducted with more than 95% of these women.

Davidson et al. (1997) conducted subsequent interviews by telephone at one year after initiation. A sample of 402 women was reinterviewed for this analysis yielding a rate of 83%. Those lost to follow-up did not significantly differ in terms of age, parity, income, educational attainment, employment status, or race/ethnicity.

Depo-Provera discontinuation rates and unintended pregnancy rates following discontinuation were assessed by use of life-table analyses. Comparisons between subgroup were based on the Wilcoxon-Gehan test. Depo-Provera discontinuation was defined as not having an injection within 4 months of the prior injection.

Davidson et al. (1997) assessed unintended pregnancy rates by use of life-table analyses of the discontinuers at risk for unintended pregnancy (defined as those having sexual intercourse and not wanting to become pregnant at the time of discontinuation). Unintended pregnancies were defined as those that occurred within 9 months of

discontinuation of Depo-Provera in women not wanting to become pregnant.

The women were primarily from minority racial and ethnic backgrounds (67% Hispanic, 26% African American, and 7% white) and were of low socioeconomic status (62% had household incomes below $10,000, and 49% did not have a high school diploma).

Thirty-one percent of the participants were teenagers, and the average age of the sample was 23.4 years. Sixty-seven percent of the sample reported at least two pregnancies, 65% had at least one unintended pregnancy, and 53% were teenagers at the time of their first delivery.

Davidson et al. (1997) found that within the first year of Depo-Provera use, the majority of women discontinued use. At 12 months the cumulative life-table discontinuation rate was 58%. Fifty-one percent of those who discontinued use of Depo-Provera (31% of the sample) did so after the first injection. Eighteen percent of those who discontinued use of Depo-Provera did so after the second injection.

Race/ethnicity and parity had significant effects on rates of discontinuation. African Americans had lower

rates of discontinuation than Hispanics. Those women with two or more live births were less likely to discontinue Depo-Provera than women with fewer than two births. Other characteristics such as age, educational attainment, number of unintended pregnancies, intention to have additional children, and partner's attitude toward Depo-Provera had no significant effect on discontinuation rates.

Those who discontinued Depo-Provera use were asked an open-ended question about their primary reason for discontinuation of the method. The majority attributed discontinuation to the side effects of the method rather than to the difficulty of returning to the clinic every 3 months. Three quarters cited either amenorrhea or irregular bleeding or other side effects, such as weight gain, headaches, mood changes, or acne, as the primary reason for discontinuation. However, only 12% cited difficulties in returning to the clinic as reason for discontinuation. Other reasons cited as the main reason for discontinuation were not being sexually active (5%) and wanting to become pregnant (4%).

Follow-up of Depo-Provera discontinuers was limited to the discontinuers who were at risk for unintended

pregnancy (i.e., those who were sexually active and did not want to become pregnant at the time of discontinuation). Subjects who used not being sexually active as the "main reason" for discontinuation and those who had not had sexual intercourse since discontinuing Depo-Provera were eliminated. Those discontinuers who listed wanting to become pregnant as the main reason for discontinuation or who listed this as a factor in their discontinuation decision were also eliminated.

Davidson et al. (1997) found that half of the group at risk for pregnancy either did not make the transition to a new contraceptive or used a contraceptive only occasionally. Thirty-three percent never used a contraceptive method during sexual intercourse, 4% rarely used birth control, and 13% reported that they sometimes used a contraceptive. The remainder (50%) of the at-risk group reported always using birth control. Of those who reported ever using a contraceptive, the most frequently used methods were oral contraceptives (55%) and condoms (31%).

Davidson et al. (1997) found that many Depo-Provera discontinuers soon experienced an unintended pregnancy. At 6 months post-Depo-Provera discontinuation the cumulative

life-table pregnancy rates were 17%, and at 9 months post-discontinuation the rates were 20%. Educational attainment, race/ethnicity, number of unintended pregnancies, and intention to have additional children were not found to have any significant effects on pregnancy rates.

Frequency of contraceptive use and whether or not the respondent was a teenager heavily influenced the rates of unintended pregnancy. Those women who never, rarely, or sometimes used contraception had cumulative 9-month life-table pregnancy rates six times higher than those women who always used contraception. Furthermore, teenagers were at significantly greater risk for unintended pregnancy than older women. The consequence of being a teenager and never or only occasionally using contraception resulted in an alarmingly high 9-month cumulative pregnancy rate of 53%.

Davidson et al. (1997) concluded that Depo-Provera discontinuers were at great risk for an unintended pregnancy because they did not make the transition to consistent use of another contraceptive. This risk was particularly high among teenagers. The majority of women reported that they discontinued Depo-Provera because the

side effects were unacceptable, even after receiving proficient and thorough counseling regarding side effects of Depo-Provera.

Davidson et al. (1997) recommended development of more aggressive procedures for alerting women about upcoming Depo-Provera appointments and for identifying and contacting women who miss injections as one possible solution to the high rates of discontinuation. Follow-up also may reduce rates of unintended pregnancies among those who discontinue Depo-Provera by reinforcing the need for an alternative contraceptive method.

Westfall, Main, and Barnard (1996) conducted a similar study to determine one-year continuation rates of Depo-Provera among a cohort of women who began using the injectable contraceptive between 1993 and 1995. Westfall et al. (1996) believed that the information obtained from the study was necessary to determine the feasibility and cost-effectiveness of Depo-Provera.

Women who received a contraceptive injection between January 2, 1993, and March 31, 1995, were provided a numerical identifier that allowed tracking over repeat visits for Depo-Provera injections. Demographic variables included age, race, payment type, and the clinic location.

Injections were given according to the manufacturer's recommended protocol of one injection at least every 3 months (approximately 14 weeks or 98 days) in every clinic. Calculation of continuation rates was based on return visits that occurred between 60 and 105 days from the previous visit. Injections that occurred prior to or up to one week following the 98th day after a woman's previous injection were considered repeat injections. After 105 days women who received repeat injections were recorded as having discontinued use and considered to be at risk for pregnancy and were provided with pregnancy tests. If these women reentered the study, the repeat injection was recorded as an initial use.

Westfall et al. (1996) calculated overall continuation rates using the number of injections for which patients were eligible, based on the length of time they had been enrolled in the study. The number of women eligible for their next injection who actually received it was calculated as the intervisit continuation rate. The 12-month continuation rate was calculated as the product of the first three intervisit continuation rates.

The study sample consisted of 5,178 women who received Depo-Provera injections. Seventy-nine percent of

the sample was white, 12% were Hispanic, and the remaining 9% were black (4%), Asian (3%), or other (2%). The majority of the sample were between the ages of 23 and 30 years (44.8%), followed by ages 19 and 22 years (25%). Eighty-five percent of the women listed method of payment as self-pay, while 10% of the women in the sample were reimbursed for services through Medicaid.

All women in the study received at least one injection. Forty-one percent discontinued use or were lost to follow-up after the initial injection. The second injection was administered to 2,813 women; of this number, 35% were lost to follow-up or discontinued use. The third injection was received by 1,662 women; of those, 32% discontinued or were lost to follow-up. A fourth injection was received by 995 women. The mean time between injections was 84 days, with a standard deviation of 6.0 days (the respective median values were 85 and 6.6 days).

Westfall et al. (1996) revealed a one-year continuation rate for Depo-Provera users of 23%. Of the women who received a first injection, 57% returned for their next visit. Between the second and third visits the intervisit continuation rate increased to 63% and between

the third and fourth visits the continuation rate increased to 65%.

For visits occurring after the first year of Depo-Provera use, intervisit continuation rates were somewhat higher. During the first year of the study the mean intervisit continuation rate among users was approximately 62%. Further, 66% of women who received a fourth injection went on to receive a fifth, and nearly 68% of those women obtained a sixth injection, and over 75% of this group received their seventh Depo-Provera injection.

No statistically significant differences were found in continuation rates based on clinic site, age, ethnicity, or payment type. A sample of approximately 200 women who discontinued Depo-Provera use after their first injection was followed. Difficulty tolerating side effects was reported as the main reason for terminating use. Of this sample, 12% were reported as lost to follow-up.

Westfall et al. (1996) found that overall continuation rates for Depo-Provera in the population described here was very low. Only 57% of users returned for their second injection, and only 23% of those eligible for a full year of contraceptive protection completed all four injections. Poor continuation between the first and

second injection was followed by slightly improved intervisit continuation rates across successive intervals.

Westfall et al. (1996) recommended careful identification of those women who actually desire long-term contraception and counseling aimed at side effects as important toward improving continuation rates. An effective strategy to enhance continuation is reminder postcards or telephone calls. These methods might prove impractical among younger women who may not want parents or partners to know of their contraceptive practices. Enhancing access to clinics that provide Depo-Provera might also improve continuation rates, especially among younger women.

Sangi-Haghpeykar, Poindexter, Bateman, and Ditmore (1996) conducted a prospective study to examine method-related experiences and acceptability of Depo-Provera among women who used this method of birth control for the first time. The specific goals of the study were as follows: (a) to examine the longitudinal changes in bleeding patterns and occurrence of side effects, (b) to determine Depo-Provera's continuation and failure rates, and (c) to delineate reasons for discontinuation of use.

Sangi-Haghpeykar et al. (1996) surveyed 536 women who had decided to use Depo-Provera for the first time at 17 provider sites in Texas. The research protocol was approved by the review boards for human research at all participating institutions before data collection. Each subject completed a baseline questionnaire after giving informed consent. Data on the subject's source of information about Depo-Provera, reasons for selecting this method, concerns about Depo-Provera, and reproductive and contraceptive histories were collected. The project staff collected demographic data that was available in patients' charts.

Fifty percent of women who received the injection were black, 25% were white, and 25% were Hispanic. The women who selected Depo-Provera ranged in age from 13 to 46 years. The mean length of education was 11.9 ± 2.9 years. Because the majority were seen at public clinics serving primarily low-income women, the income level of participants was quite low. The mean annual income for the group was $5,978. In respect to reproductive characteristics, the number of pregnancies for the women receiving the injection ranged from 0 to 10. The number of births for subjects of this study ranged from 0 to 7. One

quarter of the sample had never been pregnant, and one third had experienced no births. In addition, 32.5% of the women reported at least one elective abortion.

Sangi-Haghpeykar et al. (1996) conducted follow-ups with the women through three consecutive injections. Patients were asked about their experience with Depo-Provera during the past 3 months at each follow-up. They were asked about any side effects and/or changes in bleeding patterns, overall satisfaction with the method, and about plans to use the method for the next 3 months. The participant's medical records were used to verify receipt of each injection.

Information was collected from each subject by way of a self-administered questionnaire upon return visit to the clinic. The questionnaires were available in English and Spanish. Any questions the subjects had concerning the questionnaire were responded to by a clinic nurse or staff member. If the subjects did not return to the clinic, the information was obtained by telephone or mail.

Many women were unable to be assessed for side effects, bleeding irregularities, extent of satisfaction with Depo-Provera, and future contraceptive plans upon discontinuing the use of Depo-Provera because they did not

complete the follow-up questionnaires at their return visit to the participating clinics and they could not be contacted by telephone or mail. However, the medical records of all study participants, including women who had not completed the follow-up questionnaires, were reviewed for receipt of each injection to reach a more precise estimate of Depo-Provera's continuation rate. An individual who, based on medical records, stopped the use of Depo-Provera and switched to another method or to no method was defined as a discontinuer.

Groups of interest were compared by Sangi-Haghpeykar et al. (1996), using analysis of variance, student t test, χ^2 categorical procedure, and life-table analysis. The Wilcoxon signed-rank test was utilized to measure extent of satisfaction with Depo-Provera. Furthermore, categorical data analysis with repeated measures was used to examine changes in reports of side effects and abnormal bleeding patterns over time. A $p \leq .05$ was considered significant. SAS System statistical software was utilized to perform all analyses.

The questionnaire administered 3 months after the first Depo-Provera injection was completed by 463 participants (86%). Of those who completed the

questionnaire, 325 (70%) indicated plans to continue with Depo-Provera for another 3 months; the remainder were opting to discontinue use of the method. The 6-month follow-up questionnaire was completed by 285 (88%) of the women who had chosen to continue use of Depo-Provera. Of these women, 226 (79%) said they planned to continue use of this method for another 3 months. Of those who indicated plans to continue with Depo-Provera, 195 (86%) completed the 9-month follow-up questionnaire.

Sangi-Haghpeykar et al. (1996) estimated a method failure rate of 0.2 per 100 using life-table analysis. The failure rate applies to the entire first year of use, since women who received a fourth injection at 9 months were contacted and questioned regarding pregnancies during the 3 months following that injection.

At each follow-up contact, weight gain was the most commonly reported side effect, indicated by 38 to 46% of the recipients. Another common complaint reported by nearly one fifth of the women at each follow-up contact was headaches. No side effects associated with the use of Depo-Provera was reported by about one third of women surveyed. Regarding changes in bleeding pattern, amenorrhea was the most frequent complaint. Other commonly

reported side effects were spotting or irregular bleeding (40 to 46%) and longer periods (19 to 26%). Less than 4% reported no change in bleeding patterns while using Depo-Provera.

Sangi-Haghpeykar et al. (1996) also investigated longitudinal changes in bleeding patterns and experience of side effects. Weight gain, acne or skin problems, and amenorrhea appeared to significantly increase over time ($p < .001$), but complaints of having longer periods decreased ($p < .001$).

Ninety-five percent of the original cohort ($n = 536$) were successfully followed through medical records for the assessment of Depo-Provera's one-year continuation rate. Twenty-nine women were lost to follow-up.

Within one year after receiving the first injection of Depo-Provera, 377 patients discontinued use, resulting in a one-year continuation rate of 28.6% using life-table analysis. The cumulative discontinuation rate after 3 months of use was 36.4%, after 6 months was 54.4%, after 9 months was 64.6%, and after 12 months was 71.4%.

Women who continued to use Depo-Provera were compared with those who discontinued the use of this method. There were no observed differences in age, ethnic origin,

education, number of pregnancies or births, or plans for having children in the future. However, those who had used Depo-Provera for the entire study period and those who indicated plans to continue to use this method at the final survey were more likely to be unmarried (82%) than those who opted to stop the use of this contraceptive (66%) ($p < .05$).

Method discontinuation was significantly associated with concern about the side effects of Depo-Provera before receiving the first injection. At 6 months of follow-up, women who indicated plans to continue Depo-Provera use were less likely to have concerns about the method's side effects before the first injection than were those who opted to discontinue after 6 months. Complaints about side effects associated with previous methods were not related to Depo-Provera's discontinuation.

Sangi-Haghpeykar et al. (1996) obtained data concerning the one-year continuation rate of Depo-Provera through medical records and was acquired for 95% of the study cohort. Women who stopped using Depo-Provera were significantly less satisfied with the effect of this contraceptive on their health and were more likely to regret having used it than those who continued to use this

method ($p < .001$). In other measures of satisfaction, including convenience of the method and expense, the two groups were similar. These conclusions were consistent at 3, 6, and 9 months of follow-up.

Sangi-Haghpeykar et al. (9196) found reports of weight gain, headaches, and depression during the first 3 months of use were significantly more frequent among women who stopped Depo-Provera use than among those who continued use. In addition, reports of more frequent periods were more common among women who discontinued Depo-Provera use, whereas women who continued to use this contraceptive were more likely to report less frequent periods and lighter bleeding. After 6 months of Depo-Provera use, women who ceased to use this method cited more frequent periods and increased cramping, whereas women who continued to use this method were more likely to report lighter menstrual bleeding. After 9 months of use, frequent complaints of women who ended Depo-Provera use were weight gain, nervousness, amenorrhea, and heavier bleeding, whereas those who continued to use this method reported spotting or irregular bleeding.

The women who continued to use Depo-Provera at each follow-up contact were less likely to have experienced

side effects associated with the use of this method compared with those who discontinued use. Women who continued to use Depo-Provera after 3 months of use reported an average of 1.6 side effects, compared with 2.3 for those who stopped its use at this time ($p < .001$). An average of 1.6 side effects was reported by women continuing to use Depo-Provera at 6 months, compared with 2.1 by those who stopped use ($p < .05$). The average number of side effects reported by the two groups at 9 months of use was 1.6 and 2.4, respectively ($p < .05$).

Sangi-Haghpeykar et al. (1996) found that intolerable side effects and changes in menstrual bleeding were the most frequently reported reasons specified for discontinuing use of Depo-Provera. Two to 6% of the women who terminated Depo-Provera did so because they wanted a child. Reasons for discontinuation of Depo-Provera were examined in respect to demographic characteristics and reproductive histories. White women and those with a greater number of previous pregnancies were significantly more likely to stop Depo-Provera because of side effects than Blacks and Hispanics or women with less previous pregnancies ($p < .05$). Age, education, marital status, change in marital status, and number of live births were

not related to the reasons cited by women for discontinuing the use of Depo-Provera.

Women who discontinued the use of Depo-Provera were questioned regarding the contraceptive method they planned to use instead of Depo-Provera. The most commonly selected method was oral contraceptives followed by condoms. Of the women who ended Depo-Provera use between 3 and 10% were not planning to use a contraceptive method, and nearly one fifth were undecided. The rest planned to use a variety of other methods.

Sangi-Haghpeykar et al. (1996) discovered the most commonly reported side effects were weight gain and headaches, and the most frequently reported changes in bleeding pattern were amenorrhea and irregular bleeding. Menstrual changes were reported with greater occurrence than nonmenstrual side effects.

The primary reasons for switching from one method to another, or to no method, among women at risk for unintended pregnancies were concerns about the potential side effects associated with the use of contraceptives and the actual experience of side effects. Concerns about Depo-Provera's side effects before the first injection were associated with Depo-Provera acceptability which was

consistent with these reports. Sangi-Haghpeykar et al. (1996) found that the primary reasons for method discontinuation were the effects of this contraceptive on health and bleeding patterns. Reasons cited for stopping the use of Depo-Provera were weight gain, headaches, depression, nervousness, heavier bleeding, more frequent periods, increased cramping, and amenorrhea, whereas those who continued to use it reported lighter bleeding and less frequent periods. In studies of Depo-Provera acceptability conducted in other countries, a change in menstrual pattern, in particular amenorrhea, was also the main reason for Depo-Provera discontinuation.

Marital status also was associated with acceptability of Depo-Provera. Of the women who continued use of Depo-Provera, a significantly higher proportion were unmarried compared with those who stopped use of this method. Acceptability and continued use of Depo-Provera among unmarried women may have profound implications for the occurrence of unintended pregnancies. Unintended pregnancies have been reported to be highest among teens, minorities, and unmarried women.

Changes in bleeding patterns over time, such as polymenorrhea and prolonged bleeding and spotting, have

been reported to be more frequent after the first injection and are gradually replaced by longer cycles, less bleeding, and total amenorrhea after repeated injections. A significant increase in the reports of amenorrhea among subjects who received repeated injections was found, whereas reports of longer periods decreased with duration of use. Women may be expected to stop use of Depo-Provera with repeated injections because amenorrhea is not acceptable to many users and appears to be a reason for discontinuation. Other nonmenstrual complaints that increased with continued use were weight gain and acne or skin problems. Another cause of Depo-Provera discontinuation in the present investigation was weight gain.

Sangi-Haghpeykar et al. (1996) observed the one-year continuation rate of Depo-Provera to be 28.6%. This is considerably lower than Depo-Provera continuation rates reported in other countries. Reasons specified by patients for stopping the use of Depo-Provera suggest that certain aspects of this injectable contraceptive appear to be intolerable and lead to discontinuation. Careful patient education and counseling of women unwilling to tolerate side effects, such as menstrual changes, headaches, or

weight increases, can minimize the use of Depo-Provera in inappropriate candidates. A detailed description of all the side effects that are likely to occur should be included in information about Depo-Provera. This information may help women select a contraceptive that is appropriate for their needs and concerns, leading to less contraceptive switching, which has been reported to increase the risk of unintended pregnancies.

Summary

Depo-Provera was found to be a very popular contraceptive choice for adolescent females, especially among those who have used other types of contraception or who have been pregnant. Although Depo-Provera is safe, effective, and obtainable for adolescents, once adolescent females are started on Depo-Provera, they often fail to return for subsequent injections.

Freda et al. (1996) found that the most common reason reported for choosing Depo-Provera was forgetting to take the oral contraceptive pills; however, dissatisfaction with oral contraceptives was the typical reason given. Other reasons for choosing Depo-Provera were dislike of oral contraceptive pills and ease and perceived safety of Depo-Provera.

Common side effects experienced by Depo-Provera users included irregular periods, heavy bleeding, amenorrhea, headaches, and hair loss. Discontinuation of Depo-Provera among adolescents appears to be the result of intolerable side effects such as irregular menstrual bleeding and weight gain.

Possible methods to increase compliance with Depo-Provera include careful patient education and counseling about potential side effects. These adolescents should also be counseled on the need to use condoms because Depo-Provera does not protect against sexually transmitted diseases. Enhancing access to clinics that provide Depo-Provera may also lead to improved continuation rates. Reminder postcards and telephone calls would also be beneficial in improving continuation rates as well as identifying those adolescents who are discontinuing Depo-Provera.

When discontinuation with Depo-Provera has been confirmed, the adolescent is at risk for unintended pregnancy. Every effort should be made to have the adolescent make the transition to another method of contraception in an attempt to prevent pregnancy.

Chapter III

The Method

The purpose of this descriptive study was to determine the factors which influence the choice and discontinuation of Depo-Provera among adolescents. This chapter will describe the research methods used to investigate the variables under study. The design, population, sample, and setting as well as instrumentation and methods of data collection also will be described in this chapter.

Design of the Study

A descriptive design was utilized to determine the factors which influence the choice of Depo-Provera and discontinuation of Depo-Provera as a contraceptive method identified by adolescents. A descriptive design is utilized to observe, describe, and document aspects of a situation as it naturally occurs with no manipulation of variables (Polit & Hungler, 1995). Therefore, a

descriptive design was appropriate for this study as there was no manipulation of variables.

The variables of interest were the factors which influence adolescents' choice of Depo-Provera as a contraceptive method and the factors which influence adolescents' discontinuation of Depo-Provera as a contraceptive method as measured by the McCarter Depo-Provera Questionnaire.

The control variables were the gender and age of the participants and method of contraception utilized by the participants. Subjects were adolescent females between the ages of 13 and 20 years who were currently using or had used Depo-Provera as a contraceptive.

The extraneous variables included the truthfulness of the subjects in completing the questionnaire and were the following: the subject's age; race; previous pregnancies, if any; number of living children, if any; other methods of birth control used; reasons for choosing Depo-Provera; length of time Depo-Provera had been used; reasons for discontinuing Depo-Provera, if no longer using it; satisfaction with Depo-Provera; and whether consideration would ever be given to using Depo-Provera in the future, if no longer using Depo-Provera.

Research Questions

The research questions in this study were as follows:

1. What are the factors that influence the choice of Depo-Provera as a contraceptive method by adolescents?

2. What are the factors that influence discontinuation of Depo-Provera as a contraceptive method by adolescents?

Limitations

The following limitations were identified for this study:

1. The small sample size of this study made the results or not generalizable.

2. The use of only two clinics in a southeastern state made the results ungeneralizable.

3. The population studied included only adolescent females between the ages of 13 and 20 years.

Setting, Population, and Sample

The setting for this study was a city in the Southeast with a population of 33,000 in the city and 64,000 in the surrounding county. The setting was a private pediatric clinic and a State Department of Health clinic.

The population studied was adolescent females who were currently using or who had once used Depo-Provera as a method of contraception. The convenience sample consisted of 100 adolescent females between the ages of 13 and 20 years who were currently using or who had once used Depo-Provera as a method of contraception and were willing to participate in the study. If the adolescent was 18 years of age or younger, parental consent was obtained for participation in the study.

Methods of Data Collection

This section describes the methods of data collection. A description of instrumentation, procedure, and data collection are included.

Instrumentation. The McCarter Depo-Provera Questionnaire which was used in this study was an 11-item, researcher-developed questionnaire (see Appendix A). The McCarter Depo-Provera Questionnaire elicits demographic data, such as age, race, number of pregnancies, number of living children, and other methods of birth control utilized by the subject. Other information obtained on the McCarter Depo-Provera Questionnaire included reasons for choosing Depo-Provera, reasons for discontinuing Depo-Provera, if no longer using this method, and satisfaction

with Depo-Provera. Also included was an optional question to assess three things the subject liked most and three things the subject liked least about Depo-Provera. Because this tool was developed by the researcher, there is no established validity or reliability. Content validity was established by a panel of experts who reviewed and evaluated the tool.

Procedures. Following approval by the Committee on the Use of Human Subjects in Experimentation at Mississippi University for Women (see Appendix B), each proposed site was contacted by letter (see Appendix C) for permission to distribute questionnaires to clientele who were currently or had ever utilized Depo-Provera as a contraceptive. Packets which included a description of the purpose of the study and the participant's written consent (see Appendix D), a written consent for a parent or legal guardian of subjects younger than 18 years of age (see Appendix E), a copy of the questionnaire, along with instructions for its completion, and a self-addressed, stamped envelope were delivered to each site for mailing to each potential subject. To assure anonymity, the subject was instructed not to write her name on the questionnaire or on the return envelope. The self-

addressed, stamped envelope was addressed to the researcher, the only person who saw the questionnaire. A follow-up postcard was mailed to those who had not responded within 10 working days after the initial mailing (see Appendix F).

Method of Data Analysis

Descriptive statistics were utilized to describe and summarize data obtained with respect to demographic variables, adolescents' reasons for choosing Depo-Provera, their reasons for discontinuing Depo-Provera, and their satisfaction with Depo-Provera. Data from each question on the McCarter Depo-Provera Questionnaire was analyzed using frequency distributions and percentages.

Chapter IV

The Findings

The purpose of this study was to determine the factors which influence the utilization and discontinuation of Depo-Provera among adolescents. A survey design was implemented for this descriptive study. A questionnaire was utilized to obtain information from adolescent females about their reason for choosing Depo-Provera, and, if no longer using Depo-Provera, their reasons for discontinuing use. Data from each questionnaire were analyzed using frequency distributions and percentages. The findings from the study are presented in this chapter.

Description of Sample

The sample consisted of adolescent females who responded to the questionnaire. A total of 100 questionnaires was mailed to female adolescents ranging in age from 13 years to 20 years who reside in Mississippi. Only 14 subjects returned the questionnaire, despite being

sent a reminder postcard. The composition of the sample by age consisted of no 13-year-olds (0%), no 14-year-olds (0%), two 15-year-olds (14%), two 16-year-olds (14%), one 17-year-old (7%), four 18-year-olds (29%), two 19-year-olds (14%), and three 20-year-olds (22%). Eleven subjects (79%) were African American, and 3 subjects (22%) were Caucasian. Nearly half (43%) of the subjects had previously been pregnant. Of the subjects who had been pregnant, 4 subjects had been pregnant one time, one subject had been pregnant three times, and one subject did not specify the number of previous pregnancies. Of those subjects who had been pregnant, 4 had one living child, one had 3 living children, and one had no living children. Demographic characteristics of the subjects are presented in Table 1.

Table 1

Demographic Characteristics of the Sample

Characteristic	n	%
Age (years)		
13	0	0.0
14	0	0.0
15	2	14.0
16	2	14.0
17	1	7.0
18	4	29.0
19	2	14.0
20	3	22.0
Race		
Caucasian	3	21.0
African American	11	79.0
Previous pregnancy		
Yes	6	43.0
No	8	57.0
No. of previous pregnancies		
0	8	57.0
1	4	29.0
3	1	7.0
Not reported	1	7.0

Note. N = 14.

Contraceptive history. Eleven of the subjects (79%) had used some form of birth control method in the past. Of the 11 subjects who had utilized a birth control method, 3 had used the pill, 3 had used condoms, 4 had used the pill

and condoms, and one had used Norplant. Those subjects who reported previous pregnancies had utilized the following methods: the pill (n = 1), condoms (n =2), and both the pill and condoms (n = 3). Three subjects (21%) did not report using any previous contraceptive methods.

Reasons for choosing Depo-Provera. Thirteen of the subjects said they chose Depo-Provera because they only had to remember it every 3 months. Three subjects chose Depo-Provera because they felt that it was very effective. Four subjects chose Depo-Provera because it was inexpensive or free. Four subjects selected Depo-Provera because no one could tell they were using the method. Three subjects selected other reasons for choosing Depo-Provera and specified, "Don't have to remember to take it everyday," "thought I would have less menstruation," and "sometimes my periods don't come."

Use of Depo-Provera. The majority of the subjects had used Depo-Provera for 12 months (36%). Two of the subjects (14%) had used Depo-Provera for 36 months. The remaining subjects reported the following time lengths of Depo-Provera use: 3 months, 4 months, 6 months, 8 months, 9 months, 10 months, and 13 months.

Two subjects reported that they no longer use Depo-Provera. Reasons for discontinuation cited by both subjects were physical symptoms and menstrual problems. Physical symptoms included nausea, dizziness, weight gain, headaches, hair loss, fatigue, breast tenderness, acne, skin problems, or facial hair. Menstrual problems included vaginal discharge, irregular periods, spotting between periods, or no period.

Half of the subjects (50%) stated being very satisfied with Depo-Provera. Six subjects (43%) were somewhat satisfied with Depo-Provera. Only one subject reported being very dissatisfied with Depo-Provera. Thirteen subjects (93%) said that they would consider using Depo-Provera in the future. One subject (7%) stated that she would not consider using Depo-Provera in the future.

The last question on the questionnaire was an optional question which asked the subject to list three things that she liked most about Depo-Provera and three things which she liked least about Depo-Provera. Three common responses to what was liked most about Depo-Provera were "only have to take it every three months" (n = 5), "no periods" (n= 4), and "it's very effective" (n = 3).

Other responses about what was liked best about Depo-Provera were as follows:

"No one can tell that I'm using it."

"No cramps."

"Gain weight."

"Don't get sick."

The most commonly cited responses to what the subjects like least about Depo-Provera were "spotting" (n = 4) and "periods too long" (n = 4). The following responses were reported by three subjects: "eat a lot," "gain weight," and "headaches." Responses made by 2 subjects were "hate needles" and "dizziness." One subject responded with a complaint of a "stiff arm."

Summary

Most of the adolescents who responded to the questionnaire were over the age of 18 years. Eleven of the subjects were African Americans, and almost half of the subjects had been pregnant at least one time. Of those who had been pregnant, the majority had been pregnant one time and had one living child. Only one subject who had been pregnant reported having no living child. Half of the subjects reported previously using oral contraceptive

pills, condoms, or both. Three subjects had never used any birth control method before beginning Depo-Provera.

Over three quarters of the sample chose Depo-Provera because it was required only every 3 months. Other common reasons reported for choosing Depo-Provera were because the medication was effective, inexpensive or free, and inconspicuous. Depo-Provera had been in use by the subjects from 3 months to 3 years. The majority of the subjects had used Depo-Provera for 12 months.

Only 2 subjects were no longer using Depo-Provera. Both of the subjects who no longer used Depo-Provera reported that they discontinued use of the method because of physical and menstrual symptoms. Only one subject was very dissatisfied with Depo-Provera; the remaining subjects were very satisfied or somewhat satisfied. Only one subject said that she would never consider using Depo-Provera in the future.

Responses about three things liked most and three things liked least about Depo-Provera yielded many differing responses. The most common responses to what was liked most about Depo-Provera were "only have to take it every three months," "no periods," and "it's very effective." The most common responses to what was liked

least about Depo-Provera were "spotting," "periods too long," "eat a lot," "gain weight," and "headaches."

We, as family nurse practitioners, may be the first contact many young adolescent females make to aid them with their initial family planning assessment. By becoming familiar with their perceptions about Depo-Provera, we can educate them about the good points of using Depo-Provera as well as teach them about the possible side effects experienced with Depo-Provera. By being diligent in our teaching about possible side effects and utilizing methods to reduce side effects, we, as nurse practitioners, may be able to increase the number of adolescents who choose Depo-Provera and also increase compliance with this highly effective contraceptive method.

Chapter V

The Outcomes

Adolescent pregnancy and birth rates in the United States are the highest of any developing country (Spitz et al., 1996). Although there are many contraceptive options available to adolescents, unplanned pregnancies among adolescents continue to occur. The purpose of this study was to observe, describe, and document the factors which influence the choice of and discontinuation of Depo-Provera as a contraceptive method as identified by adolescents. Becker's Health Belief Model served as the theoretical framework for this descriptive study. The research questions for this study were as follows: What are the factors which influence the choice of Depo-Provera as a contraceptive method as identified by adolescents and what are the factors which influence the discontinuation of Depo-Provera as a contraceptive method as identified by adolescents?

The convenience sample consisted of 14 adolescent females who received health care at a local state health

department and at a local pediatric clinic in Northeast Mississippi. The instrument utilized for the collection of data was the McCarter Depo-Provera Questionnaire. Descriptive statistics were generated to describe the factors which influence adolescents' choice of and discontinuation of Depo-Provera as a contraceptive. Responses to the instrument were analyzed using frequency distributions and percentages.

A summary and discussion of the findings of this study are presented in this chapter. The conclusions, implications for nursing, and recommendations which emerged from these findings also are discussed.

Summary of Findings

Demographics of the sample. The sample for this study consisted of 14 adolescent females between the ages of 15 years and 20 years who responded to the McCarter Depo-Provera Questionnaire. The majority of the sample (79%) were African American. Eleven of the subjects (79%) had used some form of birth control method in the past. Six subjects had been pregnant and of those five reported having living children. Those subjects who reported previous pregnancies had used the pill and/or condoms.

Only 3 subjects reported never having used any method of contraceptive before beginning Depo-Provera.

Use of Depo-Provera. Most of the subjects (86%) reported choosing Depo-Provera because they only had to remember it every 3 months. Over half of the sample (57%) had used Depo-Provera for 12 months or longer. Of those who discontinued use of Depo-Provera, physical and menstrual symptoms were the causes for discontinuation. Ninety-three percent of the subjects were satisfied with Depo-Provera and stated that they would use the method in the future.

Discussion

The findings of this study indicated that the majority of the adolescents (93%) were satisfied with Depo-Provera. Most of the subjects (86%) chose Depo-Provera because they only had to remember to get an injection every 3 months. Only 3 subjects had never used contraception before beginning Depo-Provera. Those who had utilized another method of birth control had used oral contraceptive pills, condoms, or both. Almost half of the subjects (43%) had previously been pregnant. The subjects (n = 2) who had discontinued use of Depo-Provera attributed discontinuation to physical and menstrual

symptoms. Only one subject stated that she would never consider using Depo-Provera in the future.

In a similar study, Freda et al. (1996) found that dissatisfaction with oral contraceptives was the typical reason given for choosing Depo-Provera. Seventy-eight percent of the women interviewed expressed satisfaction with the method, and 64% planned to continue use of Depo-Provera. The most common reason provided for termination of Depo-Provera was a scheduled tubal ligation. Sixty-five respondents experienced side effects. The most commonly reported side effects included amenorrhea, headaches, hair loss, irregular periods, and heavy bleeding. The respondents did not perceive the side effects serious enough to prevent use of Depo-Provera. In the present study, 7 subjects had previously used the pill, and all but one subject chose Depo-Provera because they only had to remember it every 3 months. Those subjects who discontinued Depo-Provera attributed discontinuation to physical and menstrual problems. Ninety-three percent of the subjects were satisfied with Depo-Provera and would consider using the method in the future.

Westfall et al. (1996) found that the one-year continuation rate for Depo-Provera among women who

participated in their study was only 23%. Of the women who received a first injection, only 57% returned for their next visit. The intervisit continuation rate increased to 63% between the second and third visits. The continuation rate increased to 65% between the third and fourth visits. These researchers found no statistically significant difference in continuation rates based on clinical site, age, ethnicity, or payment type. The main reason reported for terminating use of Depo-Provera was difficulty tolerating side effects. Because the majority of the subjects in the present study had used Depo-Provera for 12 months or longer, it is possible that discontinuation rates were not as high in this study as in the study conducted by Westfall et al. because their study began when the women were receiving their first injection. Westfall et al. (1996) did see an increase in continuation rates with each injection.

In another comparable study, Davidson et al. (1997) found that within the first year of use, the majority of the women in their study discontinued use of Depo-Provera. More than half of the women discontinued use after the first injection. Discontinuation was attributed by a majority of the women to side effects, such as amenorrhea,

irregular bleeding, weight gain, headaches, mood changes, or acne. Thirty-one percent of the subjects were teenagers and were found to be at significantly greater risk for unintended pregnancy after discontinuation of Depo-Provera. The 9-month cumulative pregnancy rate of these teenagers who never or only occasionally used contraception after discontinuation of Depo-Provera was 53%. This study, unlike the present study, followed women during their first year of use of Depo-Provera. Because the present study consisted largely of a sample of adolescents who had been on Depo-Provera for 12 months or longer, the continuation rates may have been higher due to the number of previous injections received by the adolescents.

The Health Belief Model provided the theoretical framework for this study. This theory uses sociopsychological variables in the explanation of preventive health behavior. The Health Belief Model has been shown by current research to be a value expectancy approach to explaining and predicting health behaviors that go beyond straight information giving. This approach can be used to intervene in encouraging contraceptive use among adolescents. Because contraceptive action involves a

preventive health decision followed by correct and consistent use, the model may have useful applications to both the prevention and compliance aspects of contraceptive behavior (Zellman, 1984). Individual perceptions of adolescents related to their perceived susceptibility to pregnancy are important. Modifying factors include the adolescents' knowledge about pregnancy prevention, the types of contraceptives, the availability of contraceptives, and the consequences of pregnancy. The likelihood of action includes the adolescents' perceived benefits of a long-acting contraception as well as perceived side effects of use with this type of contraceptive.

Limitations

The limitations of this study were internal as well as external. A lack of randomization was the greatest threat to generalization of this study's findings. Sample selection was restricted to the number of subjects who responded to the questionnaire. The sampling design was one of convenience from only two clinics; therefore, a true representation of adolescents who use Depo-Provera must be questioned. The subjects were required to have parental consent to participate in the study if they were

age 18 years or younger, even though parental consent was not needed for them to receive the Depo-Provera injection. This researcher believes that the need for parental consent for participation in the study had a negative effect on participation in the study. The instrument was researcher-designed and had only face validity.

Conclusions

The following conclusions were derived from the findings of this study:

1. The majority of the adolescents had used another method of birth control before using Depo-Provera.

2. Almost half of the adolescents had been pregnant before using Depo-Provera.

3. The adolescents chose Depo-Provera because they only had to remember it every 3 months.

4. Most of the adolescents had used Depo-Provera for 12 months or longer.

5. Generally adolescents are satisfied with Depo-Provera.

6. The majority of the subjects in this study would use Depo-Provera in the future.

Implications for Nursing

Adolescent pregnancy is a national dilemma that transcends the boundaries of socioeconomic class, race, and ethnicity. Adolescent pregnancy has negative consequences for both mother and child ("Teen Pregnancy," 1997). Nearly 60% of all pregnancies in the United States are unintended, and almost one half of these occurred because contraception failed or was not used properly (Marble, 1996). Adolescent girls who become pregnant are more likely to be poor and have limited future possibilities. Pregnant teens also are less likely to seek prenatal care and more likely to have medical problems during their pregnancy ("Teen Pregnancy," 1997).

This study identified some of the characteristics of adolescent girls who chose Depo-Provera. In this study, the adolescents were half as likely to have previously used another method of birth control and have experienced a pregnancy. These adolescents chose Depo-Provera because of the convenience of receiving an injection only once every 3 months, because this method is inconspicuous to others, because of the effectiveness of the method, and because the injection was inexpensive or free. Only 2 of the adolescents in this study had experienced side effects

which they perceived severe enough to discontinue Depo-Provera. All but one of the subjects were satisfied with Depo-Provera and would consider using Depo-Provera in the future.

This study sought to improve the knowledge base of nurse practitioners as to the factors that influence adolescents' choice of Depo-Provera for contraception as well as the factors that influence their discontinuation of Depo-Provera. By understanding the factors that influence adolescents to choose Depo-Provera, nurse practitioners can speak to potential users about the benefits. Conversely, by being familiar with factors that lead to discontinuation of Depo-Provera, nurse practitioners can counsel adolescents about these factors in an attempt to increase compliance with this very effective method of contraception. By encouraging adolescents to choose Depo-Provera and counseling them on the possible side effects, compliance may be increased which could in turn lead to a decrease in adolescent pregnancy.

Recommendations for Further Study

Based on the findings of this study, the following recommendations are made for future research in nursing:

1. Replication of the study with a larger, more diverse sample.

2. Replication of the study without parental consent for participation in the study if not required for administration of Depo-Provera.

3. Conduction of research to include past sexual history and educational level.

REFERENCES

References

Becker, M. H. (Ed.). (1974). The Health Belief Model and personal health behaviors. Chicago: Charles B. Slack.

Cromer, B. A., Smith, R. D., Blair, J. M., Dwyer, J., & Brown, R. T. (1994). A prospective study of adolescents who choose among levonorgestrel implant (Norplant), medroxyprogesterone acetate (Depo-Provera), or the combined oral contraceptive pill as contraception. Pediatrics, 94(5), 687-693.

Davidson, A. R., Kalmuss, D., Cushman, L. F., Romero, D., Heratwell, S., & Rulin, M. (1997). Injectable contraceptive discontinuation and subsequent unintended pregnancy among low-income women. American Journal of Public Health, 87(9), 1532-1534.

Freda, M. C., Abruzzo-Fogarassy, M., Adams, N. V., Davini, D., DeVore, N., & Merkatz, I. R. (1996). Women's responses to Depo-Provera. American Journal of Maternal-Child nursing, 21(4), 183-186.

Harel, Z., Biro, F. M., Kollar, L. M., & Rauh, J. L. (1996). Adolescents' reasons for and experience after discontinuation of the long-acting contraceptives Depo-Provera and Norplant. Journal of Adolescent Health, 19, 118-123.

Kaunitz, A. M. (1994). Long-acting injectable contraception with depot medroxyprogesterone acetate. American Journal of Obstetrical Gynecology, 170(5), 1543-1549.

Marble, M. (1996, June 10). New 'contraceptive revolution' required to address unmet needs [On-line]. Women's Health Weekly. Available: epnet.com

Moriarty, A. L. (1997). Contraceptive options for adolescents. Journal of Pediatric Health Care, 11(3), 144-146.

Pinkston-Koenigs, L. M., & Miller, N. M. (1995). The contraceptive use of Depo-Provera in U.S. adolescents. Journal of Adolescent Health, 16, 347-349.

Polit, D. F., & Hungler, B. P. (1995). Nursing research (5th ed.). Philadelphia: J. B. Lippincott.

Sangi-Haghpeykar, H., Poindexter, A. N., Bateman, L., & Ditmore, J. R. (1996). Experiences of injectable contraceptive users in an urban setting. Obstetrics & Gynecology, 88(2), 227-233.

Spitz, A. M., Velebil, P., Koonin, L. M., Strauss, L. T., Goodman, K. A., Wingo, P., Wilson, J. B., Morris, L., & Marks, J. S. (1996). Pregnancy, abortion, and birth rates among US adolescents: 1980, 1985, and 1990. Journal of the American Medical Association, 275, 989-995.

Teen pregnancy: A major problem in the U.S. (1997). Women's International Network News, 23(3), 69-70.

Westfall, J. M., Main, D. S., & Barnard, L. (1996). Continuation rates among injectable contraceptive users. Family Planning Perspectives, 28(6), 275-277.

Zellman, G. L. (1984, August). The Health Belief Model and teenage contraceptive behavior: From theory to operation. Paper presented at the 92nd annual convention of the American Psychological Association, Toronto.

APPENDIX A

McCARTER DEPO-PROVERA QUESTIONNAIRE

McCarter Depo-Provera Questionnaire

1. How old are you?
   - _____ 13 years
   - _____ 14 years
   - _____ 15 years
   - _____ 16 years
   - _____ 17 years
   - _____ 18 years
   - _____ 19 years
   - _____ 20 years

2. What is your race?
   - _____ Caucasian
   - _____ African-American
   - _____ Native Indian
   - _____ Asian
   - _____ Spanish
   - _____ Other

3. Have you ever been pregnant?
   - _____ Yes (if yes, how many times?)_____
   - _____ No

4. How many living children do you have?_____

5. What other methods of birth control have you used? (Please check all that apply)
   - _____ The pill
   - _____ Condom
   - _____ Spermicidal foam or cream
   - _____ Condom with spermicidal foam or cream
   - _____ Norplant
   - _____ IUD
   - _____ Other method (please specify)_____

6. Why did you choose Depo-Provera? (Please check all that apply)
   - _____ Only have to remember it every 3 months
   - _____ Very effective
   - _____ Inexpensive or free
   - _____ No one can tell I'm using it

7. How long have you used Depo-Provera?_____

8. If you no longer use Depo-Provera, why did you stop using Depo-Provera? (Please check all that apply)
   _____ Physical symptoms (nausea, dizziness, weight gain, headaches, hair loss, fatigue, breast tenderness, acne or other skin problems, or facial hair)
   _____ Menstrual problems (vaginal discharge, irregular periods, spotting between periods, or no periods)
   _____ Mental problems (nervousness, anxiety, or depression)
   _____ Other (please specify)_____

9. How satisfied were you with Depo-Provera?
   _____ Very satisfied
   _____ Somewhat satisfied
   _____ Neither satisfied nor dissatisfied
   _____ Somewhat dissatisfied
   _____ Very dissatisfied

10. Would you ever consider using Depo-Provera in the future?
   _____ Yes
   _____ No

11. Please list 3 things you like most and 3 things you like least about Depo-Provera. (Optional)

Like most	Like least
a. _____	a. _____
b. _____	b. _____
c. _____	c. _____

APPENDIX B

APPROVAL OF THE COMMITTEE ON USE OF HUMAN SUBJECTS IN EXPERIMENTATION OF MISSISSIPPI UNIVERSITY FOR WOMEN

MISSISSIPPI UNIVERSITY FOR WOMEN
Columbus, MS 39701

Office of the Vice President for Academic Affairs
Eudora Welty Hall
P.O. Box W-1603
(601) 329-7142

April 8, 1998

Ms. Carey E. McCarter
c/o Graduate Program in Nursing
Campus

Dear Ms. McCarter:

I am pleased to inform you that the members of the Committee on Human Subjects in Experimentation have approved your proposed research as submitted provided any participant under the age of 18 has consent from a parent or guardian. The Committee does not fee that age 16 is a proper age.

I wish you much success in your research.

Sincerely,

Susan Kupisch, Ph.D.
Vice President
for Academic Affairs

SK:wr

cc: Mr. Jim Davidson
Dr. Mary Pat Curtis
Dr. Bonnie Lockard

APPENDIX C

AGENCY CONSENT FORM

Agency Consent Form

129 Point Harbor Drive
West Point, MS 39773

April 20, 1998

To: (Clinic)

Dear _____:

I am a graduate student at Mississippi University for Women in Columbus, Mississippi, pursuing a Master of Science in Nursing with a specialty as a Family Nurse Practitioner. My anticipated date of graduation is August 1998.

As a requirement for graduation, I am conducting a research study to determine the factors which influence adolescents' choice of and discontinuation with Depo-Provera as a contraceptive. I would like to distribute the McCarter Depo-Provera Questionnaire to patients at your clinic who are currently using or who have used Depo-Provera as a means of contraception. Attached for your review is a copy of the McCarter Depo-Provera Questionnaire, the subject's Consent to Participate, and a Parental or Guardian Consent, if required. The questionnaire takes approximately 1 to 2 minutes to complete. All data obtained from the questionnaire will be kept strictly confidential.

I would very much appreciate your consideration of this matter. You can reach me at (601) 494-7720 or (601) 244-1190 if you have any questions regarding this study. I will be happy to answer any questions over the telephone or arrange a personal meeting to discuss any issues that you might have.

Please sign below if you grant permission for distribution of the McCarter Depo-Provera Questionnaire to patients of your clinic. A return envelope is enclosed for your convenience.

_____ _____

Representative of Clinic Date

Sincerely,

Carey E. McCarter

Carey E. McCarter, RN
129 Point Harbor Drive
West Point, Mississippi 39773

April 29, 1998

Dr. Linda Sullivan, RN, CS, DSN
Children's Health Center
3491 Bluecutt Road
Columbus, Mississippi 39701

Dear Dr. Sullivan:

I am a graduate student at Mississippi University for Women in Columbus, Mississippi pursuing a Master of Science in Nursing with a specialty as a Family Nurse Practitioner. My anticipated date of graduation is August 1998.

As a requirement for graduation, I am conducting a research study to determine the factors which influence adolescents' choice of and discontinuation with Depo-Provera as a contraceptive. I would like to distribute, by means of U.S. Mail, the McCarter Depo-Provera Questionnaire to patients of your clinic who are currently using or who have utilized Depo-Provera as means of contraception. Attached for your review is a copy of the McCarter Depo-Provera Questionnaire, the subject's Consent to Participate, and a parental or guardian consent, if required. The questionnaire takes approximately 1 to 2 minutes to complete. All data obtained from the questionnaire will be kept strictly confidential.

I would very much appreciate your consideration of this matter. You can reach me at 601-494-7720 or 601-244-1190 if you have any questions regarding this study. I will be happy to answer any questions over the telephone or arrange a personal meeting to discuss any issues that you might have.

Please sign below if you grant permission for distribution of the McCarter Depo-Provera Questionnaire to patients of your clinic. A return envelope is enclosed for your convenience.

Linda Sullivan RN, CS, DSN 5/6/98
Representative of Children's Health Center Date

Sincerely,

Carey E. McCarter

Carey E. McCarter
129 Point Harbor Drive
West Point, Mississippi 39773

April 29, 1998

Office of Public Health Nursing
Mississippi State Department of Health
P O Box 1700
Jackson, MS 39215

Dear Sir:

I am a graduate student at Mississippi University for Women in Columbus, Mississippi pursuing a Master of Science in Nursing with a specialty as a Family Nurse Practitioner. My anticipated date of graduation is August 1998.

As a requirement for graduation, I am conducting a research study to determine the factors which influence adolescents' choice of and discontinuation with Depo-Provera as a contraceptive. I would like to distribute by means of U.S. Mail, the McCarter Depo-Provera Questionnaire to patients at the Lowndes County Health Department in Coulmbus who are currently using or who have utilized Depo-Provera as means of contraception. Included for your review are a copy of materials submitted for approval by the Committee on the Use of Human Subjects in Experimentation at Mississippi University for Women, a copy of the McCarter Depo-Provera Questionnaire, a copy of the subject's Consent to Participate, and a copy of the Parental or Guardian Consent Form. The questionnaire takes approximately 1 to 2 minutes to complete. All data obtained from the questionnaire will be kept strictly confidential.

I would very much appreciate your consideration of this matter. Please call me at 601-494-7720 if you have any questions regarding this study. I will be happy to answer any questions over the telephone or arrange a personal meeting to discuss any issues that you might have.

Please sign below if you grant permission for distribution of the McCarter Depo-Provera Questionnaire at your clinic. A return envelope is enclosed for your convenience.

Kaye Bender, Chair IRB 5/12/98
Representative of Lowndes County Health Dept. Date
Mississippi Department of Health

Sincerely,

Carey E. McCarter

Carey E. McCarter, RN

APPENDIX D

PARTICIPANT CONSENT FORM

Participant Consent Form

If you are 18 years old or younger and have never been pregnant, parental or guardian consent is required for participation in this study.

Dear Participant,

My name is Carey McCarter. I am a registered nurse currently enrolled at Mississippi University for Women. As part of the requirements for graduation from the Master of Science in Nursing program, I am conducting a research study. The purpose of the study is to determine the factors which influence choice of and discontinuation with Depo-Provera among adolescents. This information will be helpful in discovering ways in which any adverse side effects may be reduced or eliminated. All information reflected on the questionnaire will be confidential. I am the only person who will see the questionnaire, and it will be destroyed after analysis of data. To assure your anonymity, please do not write your name on the questionnaire or the return envelope.

Participation in this study is on a voluntary basis, and your participation in this study will not affect your health care services. If you are between the ages of 13 and 18 years and have never been pregnant, parental or guardian consent is required for participation in this study. Please have your parent or legal guardian sign the enclosed consent form. By signing below, you are agreeing to participate in this study.

Please return the questionnaire, the Participant Consent Form, and the Parental or Guardian Consent Form (if required) in the enclosed self-addressed, stamped envelope provided. Thank you for your time and effort in participating in this study.

_____ _____

Signature of Participant Date

_____ _____

Signature of Researcher Date

APPENDIX E

PARENTAL OR GUARDIAN CONSENT FORM

Parental or Guardian Consent Form

Dear Parent or Guardian,

My name is Carey McCarter. I am a registered nurse currently enrolled at Mississippi University for Women. As part of the requirements for graduation from the Master of Science in Nursing program, I am conducting a research study. The purpose of the study is to determine the factors which influence adolescents' choice of and discontinuation with Depo-Provera as a contraceptive. This information will be helpful in discovering ways in which any adverse side effects may be reduced or eliminated. I am requesting your permission to allow your child or ward to take part in this study by filling out the enclosed questionnaire. All information reflected on the questionnaire will be confidential. I am the only person who will see the questionnaire, and it will be destroyed after analysis of the data.

Participation in this study is on a voluntary basis, and participation in this study will not affect your child's health care services. By signing below, you are agreeing to allow your child or ward to participate in this study.

Please return this consent form along with the questionnaire and the participant consent form in the self-addressed, stamped envelope provided. Thank you for your time and effort in participating in this study.

_____ _____

Signature of Parent or Guardian Date

_____ _____

Signature of Researcher Date

APPENDIX F

FOLLOW-UP POSTCARD

Follow-Up Card

June 2, 1998

Dear Participant,

My name is Carey McCarter. I am a registered nurse currently enrolled at Mississippi University for Women. As part of the requirements for graduation from the Master of Science in Nursing program, I am conducting a research study. On May 20th I sent to you a packet which contained information about the study as well as consent forms, the questionnaire, and a return envelope. All information reflected on the questionnaire will be confidential. I am the only person who will see the questionnaire, and it will be destroyed after analysis of the data.

Participation in this study is on a voluntary basis. Please return the questionnaire, the Participant Consent Form, and the Parental or Guardian Consent Form (if required) in the self-addressed, stamped envelope provided. Your time and effort in participating in this study are greatly appreciated.

Sincerely,

Carey McCarter