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Why Aren't U.S. Women Using Long-Acting Contraception?

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ABSTRACT

Context: Given the level of unintended pregnancies in the U.S., it is somewhat surprising that implants and injectables, long-acting, reversible, highly effective, and convenient methods of contraception, have not attained the popularity enjoyed by other medical methods. It is important to know the reasons why women have so far spurned these methods, so that, proper interventions and targeted social marketing can be designed and implemented.

Methods: We analyzed data from the 1993 and 1995 rounds of the National Survey of Women to examine the reasons given by women for not using implants or injectables, their use intentions of these two methods, and their attitudes toward these methods that are likely to influence their decision to use or not use these methods in the future. We used logistic regression models to identify the social and demographic characteristics of women that influence their decision not to use these methods.

Results: Less than 2% of the women in our sample who were at risk of an unintended pregnancy were using the implant in 1995, and less than 3% were using the injectable. The three major reasons given by the women for not using either of these methods were: (1) lack of knowledge; (2) fear of side effects/health hazards; and (3) satisfaction with the current method being used. Age, education, marital status, parity, and current method of contraception were strong predictors of fear of side effects, lack of knowledge, and satisfaction with current contraceptive method used as reasons for not using Norplant or Depo Provera. Not many women intended to use these methods in the next 12 months; 5% for the implant, and 10% for the injectable. Single women, women who had no college education, women who had children, women who wanted to have a/another child, and women who had positive attitudes toward the effect of using an injectable were significantly more likely to express an intention to use Depo Provera. Yet, substantial proportions of women reported quite negative attitudes about the use of these methods.

Conclusions: The low prevalence of use and the low level of use intention for the implants and injectables do not hold much promise for the future of these methods. The somewhat more optimistic view that can be gleaned from the data we analyzed is that each method seems to appeal more to certain sub-groups of women. With proper interventions and social marketing targeted to such groups, it might be possible to disabuse them of their misperceptions regarding the properties of these methods and possibly increase their willingness to try these methods. While current use levels among these groups are higher than they are among others, there is still ample room for growth.

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Introduction

By the late 1980s, pill use was tapering off,[1] intrauterine devices (IUD) were no longer being produced in the United States,[2] diaphragm use was at half the level it was in 1960[3], and sterilization was becoming the primary form of contraception.[4] Thus, it appeared that there might be some demand in the United States for a new form of contraception. Norplant, a long-lasting and highly effective contraceptive was introduced in the U.S. in 1992, following a protracted clinical trial and approval process. It was accompanied by a well-documented record of safety and acceptance in developing countries among a range of cultures and demographic groups.[5] Shortly thereafter, an injectable progestin, Depo-Provera, was approved and marketed in 1992. Depo-Provera also had a formidable track record of success and acceptance among different social and demographic groups in the developing countries.[6]

The use of these two new contraceptives never took off in the United States. Three years after their Introduction one percent of women in childbearing ages reported implant use, and two percent reported injectables as their contraceptive method in 1995.[7] The low level of adoption of these two long-acting contraceptive methods is somewhat surprising for various reasons. Despite improvements in birth control over the last three decades, the fact that one-half of the pregnancies in the United States are unintended suggests a need for even better forms of contraception. The unpleasant side effects, inconveniences, and use-failure rates of most commonly used reversible contraceptives reduce their appeal. For example, the condom has no side effects but most men dislike using condoms, and it has a failure rate of about 12-15 percent. The contraceptive pill has a very low failure rate, yet some women are averse to using it because of its association with risk of cardiovascular problems and breast cancer, and milder side effects such as nausea and headaches. Because of its health risks and the ensuing litigation, the IUD has all bit disappeared from the market in the United States despite a modest

comeback effort under the auspices of the Population Council. Thus, one would expect a more enthusiastic welcome for a reversible method that could combine the effectiveness and convenience of the pill with the safety of the condom. Why, then, are women not using these two long-acting, effective, and relatively safe methods?

It is important to know why women spurned these two safe and effective contraceptives. Evidence suggests that the more varieties of contraception that are available, the lower the rate of unintended fertility.[8] Therefore, it is possible that the availability of new types of safe and convenient contraception could help curtail unintended pregnancies, which comprise one-half of all pregnancies in the United States.[9] So, why did these two methods fail to attain the popularity of other widely used medical and barrier methods? Were women frightened because of the widespread negative publicity about Norplant's side effects and its potential for coercive use? Did its high up-front cost and the need for a surgical procedure make it an unattractive option? Or were women satisfied with the methods they were using and had little or no motivation to switch? If U.S. women are not using Norplant and Depo-Provera because their cost, efficacy or side effects render them inferior to existing birth-control methods, demand for a new contraceptive may yet exist in the United States. But if U.S. women are not switching to Norplant or Depo-Provera because they are content with their current mode of contraception or do not want to use contraception, then there may be no demand for new methods. These are the questions we address in this paper.

About Norplant and Depo-Provera

A brief introduction to these two methods will be helpful later on, when we discuss the reasons women offer for not using them. Both Norplant and Depo-Provera use synthetic progestin to inhibit ovulation. Norplant consists of six match-sized tubes surgically implanted in the upper arm. The tubes release progestin continuously over five years, but fertility returns promptly once they are removed. Depo-Provera is injected every three months in the arm or buttocks, and fertility returns several months after injections stop. Norplant and Depo-Provera

are both extremely effective, with first-year failure rates of 0.2 percent and 0.3 percent, respectively.[10]

Over the long run, the cost is roughly the same, but the initial cost of the implants is rather high (about $500-$700); and the injectables cost about $140 annually. Both methods require a visit to a health-care provider. Both methods can have unpleasant side effects. Women using Norplant commonly have irregular periods, with no bleeding, less bleeding, spotting, longer bleeding or heavier bleeding.[11] Other side effects of Norplant include headache (17.8 incidents per 100 woman-years of use in the first year of trials), acne (8.8), nausea (7.6), weight gain (6.7), mastalgia (5.8), nervousness (5.8), dermatitis (5.6), change in appetite (5.1), ovarian enlargement (2.3), and hair conditions (2.0).[12] The incidence of side effects appears to decrease over time as the dosage levels off.

The most common side effects for Depo-Provera are irregular periods, more days of light bleeding or spotting, and amenorrhea. Headaches, fatigue and dizziness can also occur, although apparently in no higher rates than with other forms of hormone-based birth control.[13] Women using Depo-Provera tend to gain an average of 5.4 pounds the first year, rising to 13.8 pounds after four years of use, according to the insert on the package.[14]

Research on beliefs about Depo-Provera among U.S. women using urban family planning clinics shows that some women still need more information about the method. For example, only about one-half of the sample of Depo-Provera users thought that the injectables caused menstrual changes, underestimating a commonplace side effect of this method.[15] Yet, it seems women who are using other methods frequently overestimate the short- and long-term side effects of Depo-Provera. Research on U.S. women's beliefs about Norplant showed that many women who had received contraceptive counseling at clinics but chose methods <u>other</u> than Norplant harbored misconceptions about the severity of Norplant's side effects.[16] For example, more than one-third of these women believed use of Norplant would make it more difficult to conceive in the future. Furthermore, 29 percent feared long-term health problems, and 21

percent were concerned of harm to any future babies. These rates were all significantly higher than those among women who were using Norplant.

Finally, Norplant's introduction in the United States had a unique political aspect. Some politicians and judges seized on the availability of Norplant as a potential means of ensuring that poor teen-agers or neglectful mothers stayed on long-acting contraception. These actions caused an outcry among women's and civil-liberties organizations and the methods quickly, albeit unfairly, became associated with race and class and with coercion. A recent study among low-income Norplant users in the U.S. found that negative publicity had a modest effect on discontinuation, but the demand for Norplant rapidly declined after the method received widespread coverage in 1994.[17]

Data

Data used here were obtained in the National Surveys of Women (NSW), conducted in three waves in 1991, 1993, and 1995. The total sample of the NSW comprises two sub-samples of women. Women in the first sub-sample were first interviewed in 1983, when they were 20-29 years old and had never been married. These women were re-interviewed in 1991 (N=929, reinterview rate 71%). The second sub-sample was obtained from a new area probability sample of 20-27 year old women regardless of their marital status (N=740, response rate 76%). The combined sample consists of 1,669 women who were 20-37 years old in 1991. Both samples were based on multistage, stratified, clustered, area probability designs. The black population was over-sampled to ensure statistically adequate representation. The 1991 NSW sample was revisited first in 1993 and again in 1995; we were able to re-interview 1,093 (65%) and 994 (60%) of the 1991 sample of women, respectively.

The 1991 sample was weighted to account for differential selection probabilities, over-sampling, and nonresponse. The 1993 and 1995 samples were weighted to account for differential panel attrition. While the weighting of the samples allows generalizations to the U.S. women at these ages, marriage selection and selective sample attrition might affect the combined sample.

Since the 1983 sample of women had never been married at the time, there is a potential for marriage bias to influence the extent to which results obtained from this portion of the sample can be generalized to all women. The selective delay of marriage can affect certain attributes of the women that may be directly associated with contraceptive behavior. For example, women who postpone marriage may also be more likely to postpone childbearing. Consequently, their fertility and contraceptive behavior are likely to be different than women who marry early. The potential marriage selection bias among the older women, and the effects of differential panel attrition over time should be taken into account in interpreting inferences from the sample to the population. Sample characteristics are shown in Table 1.

Conceptual Approach and Measurement

We take an expectancy-value approach and assume that when an individual has to make a behavioral choice, she will select the alternative that is likely to lead to the most favorable outcome. Therefore, for a woman to choose a long-acting reversible contraceptive she must: a) be in need of contraception (sexually active, fecund, and does not want a baby); b) be discontent with her current contraceptive method (including no method); c) believe that switching to a long-acting method is instrumental to attaining her goal of preventing a pregnancy; and d) believe that a particular method is most likely to lead to the best outcome. These needs and attitudes affect behavioral intention, which is the most important determinant of behavior.

Given this conceptualization of the problem, we confine our analysis to sexually active women, who are not sterile, who are fecund and who are not pregnant or trying to become pregnant. These women constitute a potential pool of users of long-acting contraceptives. Three variables are available to measure the need for contraception: (1) current parity (high parity is positively associated with a need for effective contraception) , (2) whether she intends to have another child in the future, and (3) a five-item pregnancy disutility scale (Appendix A).

We use current contraceptive method as a proxy for method satisfaction, based on the assumption that behavior reveals preference: if a woman continues to use a particular method, she must be relatively satisfied with it. The measures of attitudes towards Norplant and Depo-Provera were based on a six-item, five-point scale (Appendix A). The intention to use Norplant and Depo-Provera was based on the self-reported likelihood of using either method in the next 12 months.

Results

Norplant and Depo-Provera Use

In 1993 only 1.2 percent of all the women in our sample reported using Norplant, and by 1995 this proportion had shrunk to 0.9 percent. This is the same percentage of women between ages 15-44 who reported implant as their current method of contraception in the 1995 NSFG.[18] Depo-Provera use in 1995 was also very low (1.2%) in our sample -- in fact slightly lower than that reported in the 1995 NSFG (1.9%). When the sample is confined to women who are at risk of an unintended pregnancy (as defined above), the proportion using Norplant was 1.8 percent in 1993 and 1.7 percent in 1995. Depo-Provera use was reported by 2.8 percent of the at risk women in 1995.

With such low rates of use, it is difficult to reliably distinguish the characteristics of users from non-users. While our primary focus here is on nonusers and their reasons for not using Norplant or Depo Provera, a brief description of the users is helpful for a full understanding of the nonusers' perspective. It appears that both in 1993 and 1995 implant use was relatively more prevalent among women who were young, did not have a college degree, post-married, Hispanic, Catholic, had two or more children, and did not want anymore children. Between 1993 and 1995 Norplant use either declined or remained unchanged across most categories of individual characteristics, except for Hispanic women, among whom the percentage using the implant doubled from 2.8% to 6.0%. The use pattern of Depo-Provera more or less mirrors that of Norplant, with two exceptions. Unlike Norplant, Depo-Provera use was more prevalent

among women who were black and women who had attended college but did not have a college degree. Depo-Provera was also popular among post-married women, and the increase in use of Depo-Provera among this group seems to have occurred at the expense of the implant, which declined from 12.3% in 1993 to 4.0% in 1995. The injectable seems to be also relatively widely used among women who lived in the West.

Reasons for Not Using Long-Acting Contraceptives

In both the 1993 and 1995 surveys, we asked women why they did not use Norplant, and in 1995 why they did not use the Depo-Provera.[a] The distributions of the reasons for not using these two methods are shown in Table 2. The three major reasons for not using Norplant in 1993 were: (1) not having heard of it or not knowing enough about it (KNOWLEDGE); (2) satisfaction with the current method being used (SATISFIED); and (3) fear of the method's side effects, and other medical reasons (FEAR). Two years after its introduction more than one-fifth of the women in our sample had not heard of Norplant, and another five percent of the women did not have enough information about it. By 1995 the proportion reporting "lack of knowledge" had declined to 10 percent.[b] More than one-fourth of the women were not using Norplant both in 1993 and 1995 because they were satisfied with the method they were using and did not see a need to switch. Fear of the Norplant's side effects was the third most frequently reported reason in 1993. Importantly, however, the proportion of women citing "fear" as their main reason for not using Norplant had nearly doubled by 1995, undoubtedly as a result of the negative publicity it received in the print and electronic media between the two surveys. Surprisingly, the rather high up-front cost of Norplant was not among the most frequently mentioned reasons for nonuse of Norplant; only a small proportion of the women offered cost as a reason for not using it.

[a] Women who were sterile, who were pregnant or postpartum, women who were trying to become pregnant, and women who were not sexually active were not asked these questions.

[b] In 1995, unlike in 1993, women were not asked if they had ever heard of the implant; however, women who may gave that as a reason for not using Norplant are included in the "lack of knowledge group.

The reasons given for not using Depo-Provera are not much different than the reasons given for not using Norplant. In 1995, one-third of the women in our sample either had not heard of the injectable method or did not know enough about it to consider it for use. Roughly one-fourth of the women were satisfied with their current method and did not consider switching methods. Fear of the method's side effects was the third most frequently cited reason for not using Depo-Provera; just about the same percentage of women who gave "fear" as the reason for not using Norplant.

Among women in our sample, reports of side effects by the small group of users of these two methods were commonplace (data not shown). Norplant users complained of irregular periods, heavier bleeding, mood swings, and depression. Women who reported side effects were also highly likely to report intentions to have Norplant removed before its five-year effectiveness was over. Women using Depo-Provera were even more likely than Norplant users to report side effects, though they were less likely to describe the effects as major. Among the side effects cited were irregular periods, weight gain and amenorrhea. But, unlike Norplant users, these women were unlikely to report any intention to discontinue using Depo-Provera. As one would expect, the few former users of these methods in our sample were more likely to complain about the side effects than the current users.

A positive note we derive from the data shown in Table 2 is that there is ample room to increase the use of these methods with proper targeting of potential users and with effective interventions designed to increase knowledge and to dispel misperceptions and negative beliefs based on misinformation. While most women in the sample can be considered as potential candidates for future use of these methods, we focus on three groups in particular: those who professed a lack of knowledge of the methods, those who reportedly were satisfied with their current method (including those who were not using any method at that time), and those who were afraid of the methods' side effects.

The multivariate analyses of the effect of the individual characteristics of women on the

likelihood of giving lack of knowledge, satisfaction with current method, and fear of side effects as reasons for nonuse of Norplant in 1995 are shown in Table 3.[1] Older women (age 30 or over), and women who had a college education were half as likely as younger women (under 30) and women who had no college education to give fear of side effects as the main reason for not using the implant. Single women, women who had one or more children, and women who wer using a barrier method were two to three times more likely than married women, childless women, and women who were using a medical method of contraception to cite fear of the side effects of Norplant as the main reason for not using it. While there were no race differences, women who were using no method were marginally ($p < .10$) more likely to give fear as a reason for not using Norplant than were users of a medical method.

In addition to the main effects, there are two significant interactions that influence the model predicting "fear" as a reason for not using Norplant: education and parity, and marital status and current contraceptive method. Women who had no college education and no children were significantly more likely to fear the side effects of Norplant than were women who had no college education but had one or more children. In other words, the effect of education is different for zero parity women than it is for women at higher parity. Similarly, married women who were using a barrier method of contraception were more likely to cite fear as a reason for not using Norplant than were married women who were using a medical method. Hence, the effect of marital status varied by the method women were using.

Satisfaction with current method was an important reason why women were not using Norplant in 1995; and this reason was significantly more likely to be reported by women who used medically prescribed methods than users of any other method (including no method).

[c]We present results that are significant at $.05 > p < .10$ when the coefficient (or the odds ratio) is considerably large, and stable. While this is not the common practice, there are two reasons for retaining these in the models. First, retaining such variables in the models have a reinforcing effect that either enhances the effects of other variables, or reduces the suppresor effects of other variables in the model. Second, we believe that with a larger sample these statistics would have attained statistical significance at more stringent levels of probability. Moreover, we feel it is important not to ignore such statistics when available evidence is sufficiently convincing to reject a chance occurrence (*type 3 error*).

Married women, women with a college degree, women who had no children, and women who did not want any more children were also significantly more likely to report satisfaction with their current method as the primary reason for not using an implant. There are also strong education and parity, and marital status and contraceptive method interactions. While barrier method users are less likely to be satisfied with their current method than users of medical methods, married women who were using a barrier method were more likely to give method satisfaction as their reason for not using Norplant than married women who were using a medical method. Similarly, the education effect on satisfaction with the current method is mediated by the effect of parity, and whether or not the women wanted another child.

A much smaller proportion of women in 1995 than in 1993 reported lack of knowledge as a reason for not using Norplant. The very skewed distribution of knowledge as a reason for not using Norplant hinders statistical modeling efforts, and often coefficients do not attain statistical significance despite seemingly large differences. Nonetheless, we find that married women are four times as likely as single women to report insufficent amount of information about Norplant as a reason for not using it. Also, older women who have not gone to college are more likely to be less informed than those who have a college education. That is, while knowledge increases with age, not having a college education wipes out the age effect. Two main effects that do not attain statistical significance at tradional levels ($p < .05$) but are strongly suggestive of actual differences are the effect of current method, and the effect education. College educated women and women who were using a medical method were less likely to not use Norplant because they did not know enough about it than women who had no college education or women who were using a barrier method. Two other interaction effects ($p < .10$) are between marital status and parity, and between age and contraceptive method being used. While single women, on the whole, are less likely to cite lack of knowledge for not using Norplant, single women who have no children are more likely to use lack of knowledge as a primary reason. Likewise, age effect is mediated by the contraceptive method women were actually using. Again, the “knowledge”

model is a weaker model than the other two, because of the highly skewed distribution of this reason among women who were not using the implant.

The results of the multivariate analyses of the effect of the individual characteristics of women on the likelihood of citing fear, lack of knowledge, and satisfaction with current method as reasons for not using Depo-Provera in 1995 are shown in Table 4. White women, single women, women who had one or more children, and women using a medical method of contraception were significantly more likely to report fear of the side effects of Depo-Provera as their primary reason for not using that method. White women who did not want another child, married women who wanted a child, as well as women who did not have a child and wanted to have a child were all more likely to use fear as a reason for not using the injectables. The strong education effect appears to be mediated by a stronger effect of the type of method that was being used; women who had less than college education were more likely to cite fear as a reason if they were not using any method than if they were using a medical method.

Satisfaction with their current contraceptive method was the primary reason for not using Depo Provera among college educated women, women who did not want another child, and women who were using a medical method of contraception. To a lesser degree, single women, and women who had children were also more likely to give satisfaction with their current method as the reason for not using an injectable method. Race effect is reduced by marital status, as white single women were less likely than white married women to not use Depo Provera because they are satisfied with their current method. Similarly, the effects of marital status (being single) and parity are reduced by method of contraception being used (barrier versus medical methods), and the effect of wanting a child is mediated by level of education. Women with less than a college education were generally less likely give satisfaction with their method as a reason for not using an injectable method, unless thay also wanted to have a child, in which case they were more likely to use satisfaction with current method as a reason than women who did not want a child.

Three years after its introduction, a large proportion of the women either had not heard of Depo-Provera or did not know enough about it to be able to choose it as their method. Younger women under 30 years of age, women who had no children, and women who were using a medical contraceptive method were more likely to report lack of knowledge or sufficient information about the method as a reason for not using Depo Provera. When we added interaction effects to the model, the effect of current method was altered both by the education effect, and the effect of marital status, such that when education (less than college) or marital status (married) were held constant, women who were not using medical methods were significantly more likely to mention lack of knowledge as a primary reason than women who were using a medical method.

The Outlook for Future

What does the future hold for these two long-acting contraceptives? In the following sections we examine the attitudes of women toward using Norplant or Depo-Provera in the future, and their intention to use either of these methods within the 12-month period following the survey.

Use Intention

Intention is considered to be the most important determinant of behavior.[19] Therefore, despite the low level of current use of these methods, examining use-intention might be helpful in differentiating groups who could be further targeted for promotion of these methods.

In 1991, among all women who had heard of Norplant, one-third said they would use an implant if it was available.[20] Admittedly, this was a very optimistic projection of use intention, in part because of the novelty of the method at the time, and in part because of the inherent ambiguity in the question wording. The ambiguity of the intention question in 1991 notwithstanding, the proportion of women who said they intend to use the implants has declined

since then, to 7.6 percent in 1993[2] and down to 5.1 percent by 1995.[21] In contrast to Norplant, however, the intention to use Depo-Provera increased from 4.6 percent in 1993 to 10.2 percent in 1995.[22] The distributions of intention to use these methods by relevant social and demographic charactersitics of women are shown in Table 5. As the reader will note, there are very few and rather small differences among women who intended to use either of these methods in the 12-month period following the survey. Yet, decline in intended use of Norplant between 1993 and 1995 was almost universal, where as intention to use Depo Provera had increased in almost every group during the same period.

There are several possible reasons for the change in the appeal of Norplant since its introduction. First, the drop in the use intention may be a survey artifact. Differential sample attrition between the 1991, 1993, and 1995 surveys may be responsible for part of this seemingly substantial change. Women who were missed in the follow-up interviews were more likely to be black, young, single, and low educated (high school or less), and were less likely to use any contraception. These are the same characteristics that were positively associated with the intention to use Norplant in 1991.[23] However, a comparison of the three samples on women's use intentions did not show a significant difference. Therefore, we ruled out this as a possible cause of the decline in use intention. Second, as we mentioned above, the wording of the use intention questions in the 1993 and 1995 surveys was more explicit than it was in 1991, and the questions in the latter surveys had a short and finite reference period. While this may have been responsible for part of the decrease in the intention to use Norplant, the continuation of the decline from 1993 to 1995 implies that other external causes may be responsible for this. There are three other plausible reasons why Norplant may have lost its appeal. First, in the follow-up surveys, a greater proportion of women knew of Norplant and knew more about it. It is possible that as women became more aware of Norplant's cost and side effects, they also

[d] See Appendix B for the distribution of use intention of Norplant and Depo Provera in 1993 and 1995 by social and demographic characteristics of the sample women.

became less willing to use it. Second, this unwillingness may have been exacerbated by the vast negative publicity about Norplant in the media following suggestions of coercive or punitive use of implants, cases of insertion and removal problems, and the ensuing litigation. Third, the FDA approval of and the marketing of the injectable contraceptive Depo-Provera in 1992 might have taken away some of Norplant's potential market.

The results of the multivariate analysis of Depo-Provera use intention are shown in Table 6. It is apparent from these data that the injectable method of contraceptive appeals to a distinct group of women in this sample. Single women, women who have children, and women who want to have a/another child were twice as likely to express an intention to use Depo Provera in the next year than were married women, women who did not have a child, and women who did not want a child. There were no age or race differences in intentions, and they were excluded from the model because retaining those two characteristics in the model had a suppressor effect on the other variables, reducing their predictive power. Current contraceptive method does not seem to have any bearing on whether or not women intend to use Depo Provera, although users of a barrier method may be more likely to do so than women who were using a medical method. Finally, we also included an attitude scale that measured women's perceptions of what it would be like to use an injectable method. As a discrete (continuous) variable the scale indicated that the likelihood of reporting use intention increases as women express more positive perceptions of what it would mean for them to use the injectable. For sake of parsimony, we categorized the attitude variable and split at the 50^{th} percentile. As is shown in Table 6, women who were in the top 50 percent were five times more likely to express an intention to use Depo Provera than women who were in the bottom 50 percent of the attitude scores.

We also attempted to predict who would express an intention to use Norplant in the year following the survey. However, primarily because of the very small number of women who did express an interest and thus the highly skewed distribution of the sample, we were not able to

model the intention to use Norplant. None of the characteristics we used to predict Depo Provera use intention attained statistical significance. We also modeled use intention of Depo Provera or Norplant jointly. But, such a model that combines use intention of Depo-Provera and Norplant is heavily influenced by the pattern of Depo Provera use intention and does not reveal any additional information than shown by the Depo Provera model alone.

Stability and Reliability of Intentions

In accordance with our conceptual approach, we posit a high correlation between a woman's intention to use a long-acting contraceptive method and her actual behavior – using that method. The instability of use intention and its weak relationship with actual behavior in our sample is evident from the data shown in Table 7. Only a fraction of the women who said they intended to use Norplant in 1991 repeated that intention in 1993 (12.3%), and only 5.0 percent of the women who in 1991 said they would use Norplant were actually using the implant in 1993. The lack of correspondence between intentions in 1991 and 1993 and the weak relationship between intention in 1991 and actual use in 1993 might be attributed to the ambiguity and lack of specificity in the intention question in 1991, as discussed above. However, the correspondence between the 1993 intentions and 1995 intentions and behavior are not much different. Only about one-fifth of those who said in 1993 that it was likely that they would use Norplant in the next 12 months reported a similar intention in 1995, and only 5.3 percent had actually used or were using Norplant. The data for Depo-Provera also show a weak relationship between use intention and behavior. One in ten women who in 1993 said it was likely that they would use Depo-Provera in the next 12 months reported a similar intention in 1995; and none of those who said they would use the injectable were using or had used this method in 1995.

Clearly, intentions are subject to change. It is reasonable to expect that a measure of intention taken some time prior to the observation of behavior may differ from the person's intention at the time her behavior is observed. Further, the longer the time interval between

measurement of intention and observation of behavior, the greater the likelihood that the individual may have obtained new information or that certain events may have occurred to change her intention. We believe, this was the case for Norplant. Realization of intentions also depends on the degree to which carrying out the intention is completely under the person's control. Among others, external factors such as accessibility, availability, cost, husband/partner approval, provider or clinician influence can impede individual control over method choice.

Attitudes Toward Future Use

Low levels of use intentions for the two long-acting contraceptive methods are accompanied by rather strong negative attitudes toward the use of these methods (Table 8). More than one-half of the sample women in 1993 said using Norplant would be *bad* for them. The corresponding figure for Depo-Provera was 61 percent in 1995. Undoubtedly, such feelings are based on the perceptions of the putative side effects of these methods. Two-thirds of the women were wary of the side effects of Norplant in 1993, and three-fourths of the women in the 1995 sample were concerned about the side effects of Depo-Provera. Other negative attitudes toward these methods include inconvenience, difficulty in obtaining them, discomfort in using them, and health concerns. Also important is the element of cost: More than 60 percent expressed concern in 1993 that Norplant was expensive to obtain, and nearly one-half of the women reported cost as a negative factor for Depo-Provera. Last but not least, 60 percent of the women thought neither method would please their husbands or partners (among those who had a husband or partner). Whether or not (or how much of) this and any of the attitudes towards these methods are based on accurate information is not clear. The limited knowledge scales we used in these surveys indicate that most women are generally rather well informed; but we do not know how these attitudes are influenced by the amount and accuracy of knowledge of these methods. What seems to be clear is that, based on the data we have, among a relatively representative national sample of women in their mid-twenties to early 40's, neither of these methods is likely to attain the popularity of the contraceptive pill or the surgical

sterilization. Use of these methods may not even reach the use levels of diaphragm and IUD in the late 70s and early 80s before their eventual demise.

Conclusion

It is clear from our data and work by others that long-acting reversible contraception has not fulfilled its promise. The answer to our question in the title is that American women are not using long-acting contraception because:

a) they are heavily relying on contraceptive sterilization and the oral pill;

b) by and large they profess to be satisfied with the method they are using;

c) a substantial proportion of women are not sufficiently informed, and may have misperceptions concerning these methods;

d) a large proportion of the women are fearful of the side effects of these methods, and are concerned about their health; and

e) a substantial proportion of the women find these two methods uncomfortable, inconvenient, and expensive to use.

It should also be noted that neither of these methods prevents the transmission of STDs and HIV. Women who are likely to engage in high-risk sexual behaviors that expose them to these diseases may prefer to use condoms, rather than to use dual methods to prevent both pregnancy and STD infections.

The low prevalence of use and the low level of use intention for Norplant and Depo-Provera do not hold much promise for the future of these methods. The somewhat more optimistic view that can be gleaned from the data we have presented is that both methods seems to appeal to certain groups of women. With proper interventions and social marketing targeted to such groups, it might be possible to disabuse them of their misperceptions regarding the properties of these methods and possibly increase their willingness to try these methods. Specifically, both Norplant and Depo-Provera seem to appeal to young single women who do not want children but are not ready for or do not want surgical sterilization. While current use levels among these

groups are higher than they are among others, there is still ample room for growth.

To date, most studies on Norplant and Depo-Provera use have been hampered either by their sampling design or sample size, or both. Unfortunately, the present study is no exception. We were equally hampered by sample attrition between surveys, and ultimately by the small sample size. Moreover, highly skewed distributions of the outcome variables of interest, particularly those pertaining to Norplant, also hindered our efforts to answer without any ambiguity the research questions we posed. Hence while some ambiguity remains in our findings, nonetheless the results are useful in understanding why American women are reluctant to use these two methods, and they provide a direction for future research. The most recent cycle of the National Survey of Family Growth is based on a nationally representative large sample of women in reproductive ages. Careful analyses of these data might yield new and more reliable information on Norplant and Depo-Provera use. Such nationally representative surveys also need to be supplemented by quantitative and qualitative studies among clinic populations and local area samples to fully understand the decision-making mechanism surrounding the use of long-acting contraceptive methods. The scope and methods of large-scale national surveys preclude in-depth inquiries into many of the unanswered questions regarding Norplant and Depo-Provera use.

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Table 1. Relevant Social Demographic Characteristics of the Sample Women in the 1993 and 1995 National Survey of Women (percent)

	1993	1995
Race/Ethnicity		
White	78.4	75.1
Black	16.6	16.2
Hispanic	5.0	8.7
Age (in 1991)		
20-24	23.4	26.3
25-29	40.7	38.4
30 and older	35.9	35.3
Marital Status		
Currently married	48.6	53.6
Never married		
Cohabiting	10.8	8.0
Non-cohabiting	29.2	25.8
Post-married	11.4	12.6
Education (in 1991)		
$\leq$ High school	39.4	34.3
Some college	30.7	31.2
College or more	29.9	34.6
Region		
Northeast	20.0	19.7
South	30.6	32.7
Midwest	34.6	34.5
West	14.8	13.1
Parity		
Zero	44.3	36.5
One	23.0	23.9
Two or more	32.7	39.7
Want More Children		
Yes	50.2	38.1
No	49.8	61.9
Contraceptive Need Status		
Not exposed	(35.6)	(46.0)
Not sexually active	10.3	11.3
Sterile (partner sterile)	19.0	25.0
Pregnant/postpartum	4.2	6.1
Trying to become pregnant	2.1	3.6
Exposed	(64.3)	(54.1)
Not using any method	17.0	15.1
Using a method	47.3	39.0
Pill/IUD	27.0	20.2
Norplant, Depo-Provera	1.4	2.0
Condom	15.7	12.7
Other	3.2	4.1
N	1093	994

Table 2. Percent Distribution of the Main Reasons Given by Women for Not Using Norplant or Depo-Provera 1993, 1995

	Norplant '93	Norplant '95	Depo-Provera '95
Never heard of method	28.1	n.a.	9.1
Lack of knowledge	4.9	9.3	27.0
Satisfied with current contraception	26.7	28.1	20.6
Want short-term contraception	3.2	3.2	1.3
Fear	12.0	22.0	17.0
Medical reasons	2.4	2.1	3.1
Cost	3.5	2.3	1.9
No interest, don't know	5.5	12.2	6.9
Does not use contraception	5.0	7.0	3.2
Other/no need in general	8.8	13.7	10.0
Total	100.0	100.0	100.0
N	702	546	529

Table 3. Reason for Not Using Norplant in 1995 by Individual Characteristics (odds ratios obtained from logistic regression models, reference category shown in parentheses)

	Fear	Satisfied	Knowledge
Main Effects			
Black (white)	0.75	1.12	1.32
Age 30 or older (< 30)	0.53*	1.46	0.61
Single (married)	1.90*	0.20**	0.25*
College or higher (< college)	0.40*	4.41**	0.32[illegible]
Parity one or higher (zero parity)	2.90**	0.39*	1.80
Wants more children (does not want)	n.a	0.34*	0.86
Using a barrier method (medical method)	2.25**	0.19***	3.80[illegible]
Using no method (medical method)	1.70[illegible]	0.04***	2.98
Interaction Effects			
Married and using a barrier method (Married and using a medical method)	3.66*	1.93*	n.a
<College education & parity zero (< college education & parity one +)	2.79*	0.36*	n.a
< College education & wants a child (< college education & does not want)	n.a	3.87	n.a
Age 30 or older & < college education (age 30 or older & college education)	n.a	n.a	4.80*
Single & parity zero (single & parity one +)	n.a	n.a	3.98[illegible]
Age 30 or older and using a barrier method	n.a	n.a	3.18
Age 30 or older and using no method (Age 30 or older using a medical method)	n.a	n.a	7.42[illegible]
-2 Log Likelihood	441.5	446.8	272.2
Chi Square (df)	28.9(10)***	85.1(12)***	18.4(12)[illegible]
N	437	437	437

Table 4. Reason for Not Using Depo-Provera in 1995 by Individual Characteristics (odds ratios obtained from logistic regression, reference categories shown in parentheses)

	Fear	Satisfied	Knowledge
Main Effects			
Black (white)	0.18*	0.38	1.17
Age 30 or older (< 30)	0.81	0.86	0.60*
Single (married)	6.90***	4.85[illegible]	1.29
College or higher (< college)	3.27**	2.53*	1.84
Parity one or higher (zero parity)	2.97*	1.88[illegible]	0.43*
Wants more children (does not want)	n.a.	0.37*	n.a
Using a barrier method (medical method)	1.78	0.09***	0.24*
Using no method (medical method)	0.14*	0.04***	0.25*
Interaction Effects			
White & wants a child (White & don't want a child)	0.15**	n.a	n.a
Married & wants a child (Married and don't want a child)	2.95[illegible]	n.a	n.a
Parity zero & wants a child (Parity zero & don't want a child)	5.06**	n.a	n.a
< College education & not using any method (< College education & using a medical method)	10.7*	n.a	5.52**
< College education & using a barrier method (< College education & using a medical method)	n.a	n.a	4.99**
< College education & parity 1+ (< College education & parity 0)	n.a	n.a	2.12
White single women (White married women)	n.a	0.14*	n.a
< College education & wants a child (< College education & don't want a child)	n.a	3.84**	n.a
Married & using a barrier method (Married & using a medical method	n.a	5.21*	3.22*
Parity zero & using a barrier method (Parity zero & using a medical method)	n.a	2.88[illegible]	n.a
Married & not using any method (Married & using a medical method)	n.a	n.a	3.33*
-2 Log Likelihood	364.5	413.0	545.7
Chi Square (df)	49.3(11)***	69.7(12)***	16.8(12)[illegible]
N	435	435	435

[illegible]p<.10 ; * p≤.05 ; ** p≤.01 ; *** p≤.001

Table 5. Norplant and Depo Provera Use Intention by Relevant Social Demographic Characteristics of the Sample Women in 1993 and 1995 National Survey of Women (percent).

	NORPLANT		DEPO PROVERA	
	1993	1995	1993	1995
All women	7.6	5.1	4.6	10.2
Race/Ethnicity[1]				
White	7.5	4.8	3.2	6.3
Black	8.3	7.2	5.4	15.3
Hispanic	6.7	3.3	13.0	20.6
Age[1]				
20-24	9.9	4.8	7.6	12.7
25-29	7.1	6.3	2.0	6.9
30 and older	6.3	4.0	3.7	6.7
Marital Status[2]				
Currently married	7.4	4.6	4.1	6.5
Post-married	11.2	8.8	6.3	15.1
Never Married	7.2	4.6	3.6	10.2
Education[2]				
High school or less	6.7	8.4	6.6	9.2
Some college	8.3	3.9	2.8	13.0
College or more	8.0	3.9	2.0	4.8
Religion[1]				
Protestant	9.4	4.0	4.9	8.7
Catholic	4.5	4.6	0.9	7.8
Other	9.4	9.8	10.3	8.7
Region[1]				
Northeast	6.2	3.6	4.0	3.6
South	6.6	3.4	3.1	8.1
Midwest	7.3	5.5	3.2	8.1
West	12.4	9.6	7.6	18.9
Parity[2]				
Zero	7.2	4.5	1.8	6.1
One	7.2	4.5	8.1	12.6
Two or more	8.8	6.4	4.4	7.9
Want more children?[2]				
Yes	4.9	4.5	3.8	9.0
No	11.9	5.7	4.3	8.0
Current contraceptive method[2]				
Medical	7.1	7.4	3.7	13.7
Barrier	9.4	6.8	8.8	6.8
Other	16.7	4.4	2.7	11.1
None	6.3	3.6	3.6	7.1
N[3]	884	745	898	756

[1] Measured at baseline survey in 1991.
[2] At each follow-up survey year (1993 & 1995)
[3] Sample size may vary slightly for each variable due to missing data and no answers.

Table 6. Intention to Use Depo Provera in the Next 12 Months (Odds ratios from logistic regression model; reference category shown in parentheses)

Variable	Odds ratio	*P* value
Single (married)	2.17	< .04
College education (< college education)	0.33	< .02
Parity 1 or higher (parity 0)	2.33	< .05
Using a barrier method (using a medical method)	1.40	< .10
Using no method (using a medical method)	0.91	n.s
Wants a child (don't want a child)	2.34	< .03
Top 50% of the Attitudes toward Depo Provera Scale (bottom 50%	5.13	< .001
-2 Log Likelihood	236.9	
Chi-square	33.5(8)***	
N	435	

Table 7. Stability of Use Intention and Its Relation to Behavior, 1993, 1995 (percent)

Method	Use Intention	Use
Norplant Use Intention in 1991:	Likely in 1993	1993
Likely	12.3	5.0
Not likely	5.7	0.6
In 1993:	Likely in 1995	1995
Likely	19.6	5.3
Not likely	4.3	0.2
Depo-Provera Use Intention in 1993:	Likely in 1995	1995
Likely	10.8	0.0
Not likely	7.6	2.3

Table 8. Attitudes Toward Norplant Use in 1993 and Depo-Provera Use in 1995 Among Women At Risk of Pregnancy (percent)

	Norplant	Depo-Provera
Use of the Method will be:		
Bad	55.7	61.1
Difficult	38.0	37.4
Unhealthy	38.2	50.8
Uncomfortable*/Inconvenient**	40.5	33.5
Expensive	60.7	47.5
Unnecessary	77.9	n.a.
The method will:		
Be painful to use(insertion/injection)	44.7	44.6
Cause side effects	66.6	75.4
Not make partner happy	61.5	61.1
N (Unweighted)	493	475

* For Norplant only.
** For Depo Provera only.

Appendix A

In 1993 the pregnancy disutility was measured on a five-point scale ranging from strongly agree to strongly disagree on the following items.

1. A pregnancy would bring joy to my life.
2. A pregnancy would cause me emotional difficulties.
3. A pregnancy would interfere with my education or my work.
4. I would experience financial strain if I became pregnant.
5. A pregnancy would totally disrupt my life.

The measure is the sum of the scale scores of the five items, ranging from –10 to +10. In 1995, the first item (A pregnancy would bring joy to my life) was dropped from the scale, and therefore the scale score runs from –8 to +8.

Attitudes toward Norplant in 1993 were measured with six questions using a five-point scale, ranging from agreeing strongly with the first phrase to agreeing strongly with the second. The six questions ran as follows:

Would your using Norplant in the next 12 months be:

1. good or bad?
2. difficult or easy?
3. healthy or unhealthy?
4. comfortable or uncomfortable?
5. necessary or unnecessary?
6. expensive or inexpensive?

Each item was coded so that the most positive response got five points, then the items were summed.

We used the same approach to coding attitudes toward Depo-Provera in 1995. However, in 1995, we made the scale with the following seven questions:

Would your using Depo-Provera in the next 12 months be:

1. good or bad?
2. painful or not painful?
3. difficult or easy?
4. healthy or unhealthy?
5. convenient or inconvenient?
6. expensive or inexpensive?
7. effective or ineffective?