

Consistency of Condom Use Among Users of Injectable Contraceptives

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Use of condoms for protection against sexually transmitted diseases (STDs) was examined over a nine-month period among 536 women from 17 clinics in southeastern Texas who had selected the injectable depot-medroxyprogesterone acetate (DMPA) as a contraceptive. Among women who were using condoms prior to receiving DMPA, nearly half said they never or rarely did so after initiating DMPA use; only 18% of all women in the study used condoms consistently while relying on DMPA. Factors associated with consistent condom use were being black (odds ratio of 2.0), being unmarried (odds ratio of 2.2), having a history of STD infection (odds ratio of 1.8), having previously used condoms (odds ratio of 2.7) and having no interest in future child-bearing (odds ratio of 1.8). Our data suggest that the majority of users of injectables may not be protected from exposure to the human immunodeficiency virus and other STDs.

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The approval of depot-medroxyprogesterone acetate (DMPA) by the Food and Drug Administration in October 1992 marked the 1990s as a decade of new and expanded family planning alternatives for women. DMPA, a progesterone-only injectable contraceptive, has a failure rate comparable to that reported for female sterilization.¹ Thus, it is a highly effective long-term method.

However, DMPA does not provide protection from infection with the human immunodeficiency virus (HIV) or other sexually transmitted diseases (STDs). Therefore, women who use DMPA may be at risk of disease exposure if they do not also protect themselves with condoms, which provide effective prophylaxis against STD infection.²

Although condoms are a popular contraceptive method among American women,³ they are used only rarely in conjunction with other methods. Studies examining the combined use of condoms with various other contraceptives have demonstrated that among women who use nonbarrier methods (e.g., the pill, sterilization or hormonal implants), only a small percentage also use condoms consistently⁴ or plan to use them.⁵

The use of condoms along with hormonal contraceptive methods such as the

implant and DMPA appears increasingly important in light of one recent animal study suggesting a relationship between progestin exposure and vaginal atrophy (which might lead to increased risk of HIV infection).⁶ Although it is premature to extrapolate the findings of this study to humans, the results highlight the importance of correct and consistent condom use among users of hormonal contraceptives.

As of this writing, no published research has examined the frequency of condom use among DMPA users subsequent to the method's approval in the United States. Our objectives in this article are to examine the longitudinal pattern of condom use among women using DMPA for the first time and to identify factors that may be associated with consistent condom use among these women.

Materials and Methods

This article is based on a longitudinal study of new users of DMPA in southeastern Texas. From October 1993 to September 1994, women receiving DMPA for the first time from 17 family planning providers were invited to participate in the study. After the purpose of the study was explained, and before any study participants received their first DMPA injection, women were asked to complete an anonymous, self-administered baseline questionnaire, which gathered information on their demographic, socioeconomic and reproductive characteristics, including information about the use of condoms during the previous three months. The

questionnaire was printed in both English and Spanish, and a nurse or other staff member was always available to respond to any queries.

All women receiving DMPA were advised to use condoms for STD prevention and were instructed on their proper use by a nurse or other staff member. In addition, women were provided with written instructions in both English and Spanish on how to use a condom, and each woman was supplied with several condoms.

After their first injection, participants were followed for three consecutive injections, coinciding with three-, six- and nine-month follow-up points. At each follow-up contact, women were asked how often in the past three months they had used condoms during sex. Responses were coded on a five-point scale wherein 1 represented never, 2 rarely, 3 occasionally, 4 usually (at least 90% of the time) and 5 always. If a woman failed to return to the clinic, staff members obtained follow-up information by telephone or mail.

Condom-use data at each follow-up point were transformed into a dichotomous variable. Women who reported having usually or always used condoms in the past three months were considered consistent users, while those who reported never having used condoms in the past three months or having used them rarely or occasionally were defined as inconsistent users.

Condom-use data were combined for all three follow-up points. Women who indicated they had used condoms consistently for a portion of the time when they were on DMPA (3-6 months), but for the remainder of the study had never or rarely used them, were considered inconsistent users. The majority of inconsistent users (92.2%) never or rarely used condoms while relying on DMPA.

In the initial univariate analyses, we investigated the association between age, race, marital status, income, education, religion, and reproductive history (e.g., number of live births, number of abortions, childbearing intentions, history of condom use and STD infection) and condom use. For each study variable, the crude odds ratios and corresponding 95% confidence intervals were calculated. We

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Table 1. Percentage distribution of women using DMPA, by frequency of condom use in previous three months, according to duration since initial injection, Texas, 1993

Frequency	Months since first injection		
	3 (N=463)	6 (N=285)	9 (N=195)
Never	61.1	54.0	53.3
Rarely	10.6	9.5	11.8
Occasionally	3.2	3.5	1.5
Usually	8.4	9.8	9.7
Always	13.0	19.6	22.1
Not sexually active	3.7	3.6	1.6
Total	100.0	100.0	100.0

then used multivariate logistic regression to investigate the relationship between condom use and the study variables. Odds ratios and 95% confidence intervals were calculated to test for significant relationships. The final multivariate models included all statistically significant variables, as well as those factors the removal of which changed the effect of other variables. We examined change in condom use over time using categorical data analysis with repeated measures.

Results

A total of 536 women agreed to participate in the study and completed the baseline questionnaire upon receiving their first DMPA injection. Fifty percent of the study participants were black, 25% were white and nearly 25% were Hispanic. They ranged in age from 13 to 46 years (mean age of 24.4). The majority (77%) were not married at the time of entry into the study. A detailed description of the study cohort has been published previously.⁷

Completed questionnaires were obtained at three, six and nine months after baseline from 463, 285 and 195 women, respectively. Because of loss to follow-up at the three stages of data collection, among the original sample of 536 participants, we were unable to obtain complete condom-use data on 144 women (27%). The 463 women who completed the questionnaire at the three-month follow-up represent the study cohort for whom any condom use-data are available. Ten women did not have intercourse during the follow-up period and were thus not included in the analysis. The cumulative discontinuation rates of DMPA according to life-table analyses were 36% after three months of use, 54% after six months and 65% after nine months.⁸

Among the women who completed the baseline questionnaire, 169 (32%) reported having used condoms alone or in conjunction with other methods during the

three months prior to receipt of their first DMPA injection (condom use in the three months prior to baseline was recorded as a dichotomous variable). About 50% of these women (N=84) reported never or rarely using condoms while relying on DMPA. Thus, 18% of the 463 women for whom follow-up data were available reported having discontinued condom use once they began using DMPA.

Table 1 details the frequency of condom use among DMPA users at three, six and nine months after their first injection. Among women who completed the questionnaire at three months, 13% reported always having used condoms in the past three months, whereas 61% reported never having used them during that time period. At six and nine months, more women reported having always used condoms in the previous three months (20% and 22%, respectively), while fewer women reported never having used them. Among women for whom any condom-use data were available, 18% (N=85) were classified as consistent condom users (not shown). Consistent condom use significantly increased over time, while inconsistent use decreased (p<.05).

Table 2 displays the relationship between consistent condom use and patient characteristics. Consistent condom use among women using DMPA was not significantly associated with age, but it was related to ethnicity: Black women were more than twice as likely as white women to use condoms consistently. Unmarried women were more likely to report consistent condom use than married women (odds ratio of 2.8), and those with some college education were more likely to do so than women with less than a high school education (odds ratio of 1.8). Baptists were more likely to be consistent users than were Catholic women (odds ratio of 2.5). Income was not significantly associated with the consistency of condom use.

Women who used condoms during the three months prior to their first injection of DMPA were more likely than those who had not done so to use condoms in conjunction with DMPA (odds ratio of 2.5). Furthermore, the probability of consistent condom use was nearly twice as high among women with a history of STD infection as among those with no past diagnoses. Women who at baseline indicated no desire for children in the future were more likely than those who were spacing or postponing future births to use condoms consistently (odds ratio of 1.6). Neither the number of live births a woman had experienced nor the number of abor-

tions she had obtained were related to the consistency of condom use.

For the multivariate logistic regression model, we retained variables that were independent risk factors for consistent condom use, as well as variables the removal of which changed the effect of other factors (Table 3). Thus, the final model included race, marital status, education, religion, pre-

Table 2. Percentage distribution of women currently using DMPA, by selected characteristics, according to consistency of condom use; and crude odds ratios (and 95% confidence intervals) for consistent condom use

Characteristic	Condom use		Odds ratio for consistent use
	Consistent (N=85)	Inconsistent (N=368)	
Age			
≤19	21.2	19.8	1.0
20–24	44.7	41.6	1.0 (0.6, 1.9)
25–29	14.1	22.0	0.6 (0.3, 1.3)
≥30	20.0	16.6	1.1 (0.5, 2.4)
Race/ethnicity			
White	20.2	28.1	1.0
Black	69.1	43.2	2.2* (1.2, 3.8)
Hispanic	10.7	28.6	0.5 (0.2, 1.2)
Marital status			
Married	10.6	25.0	1.0
Not married	89.4	75.0	2.8** (1.3, 5.8)
Education			
<high school	22.6	29.2	1.0
High school	22.6	32.2	0.9 (0.5, 1.8)
Some college	54.8	38.6	1.8* (1.0, 3.3)
Religion			
Catholic	16.7	30.1	1.0
Baptist	65.5	47.6	2.5** (1.4, 4.7)
No preference	9.5	11.1	1.5 (0.6, 4.0)
Other†	8.3	11.1	1.4 (0.5, 3.6)
Income			
<\$10,000	80.0	83.4	1.0
\$10,000–\$14,999	12.9	11.1	1.2 (0.6, 2.5)
≥\$15,000	7.1	5.4	1.4 (0.5, 3.5)
Previous condom use			
No	51.8	73.1	1.0
Yes	48.2	26.9	2.5** (1.6, 4.1)
Previous STD			
No	68.2	79.6	1.0
Yes	31.8	20.4	1.8* (1.1, 3.1)
Intend future birth			
Yes	57.1	68.5	1.0
No	42.9	31.5	1.6* (1.1, 2.7)
Number of live births			
0	31.8	33.7	1.0
1	32.9	34.2	1.0 (0.6, 1.8)
≥2	35.3	32.1	1.2 (0.7, 2.1)
Number of abortions			
0	74.1	64.9	1.0
1	18.8	22.9	0.7 (0.4, 1.3)
≥2	7.1	12.3	0.5 (0.2, 1.2)
Total	100.0	100.0	na

*Statistically significant at p<.05. **Statistically significant at p<.01. †Here and in Table 3, other religions include Jewish, Pentecostal, Episcopalian and other Protestant. Notes: na=not applicable. Here and in Table 3, an odds ratio of 1.0 was assigned to all reference groups.

vious condom use, STD history and future childbearing intentions. In addition, we controlled for change in marital status and number of previous abortions. The results of the multivariate analysis were similar to the results of the univariate analyses. The probability of consistent condom use remained higher among blacks, single women, those with a previous history of condom use or STD infection and women who intend no future births. However, in the multivariate context, education and religion were no longer associated with consistency of condom use.

Discussion

This article is the first report of an investigation on the extent of condom use among DMPA users since the approval of the injectable as a contraceptive. Our data indicate that 18% of women initiating use of DMPA stopped using condoms (about one-half of those who were using condoms prior to beginning injectable use). This percentage is slightly lower than rates reported in a similar population of users of the contraceptive implant (21%).⁹ However, that study reported on intentions to use condoms, rather than actual use. Nevertheless, our findings indicate that while women initiating DMPA enhance their protection against unintended pregnancy, they place themselves at risk of exposure to HIV and other STDs.

Although women who used condoms before receiving DMPA were more likely than nonusers to combine both methods, nearly half of former condom users (49.7%) abandoned the use of condoms once they started using DMPA. This finding suggests that women requesting DMPA should receive adequate counseling about the importance of using condoms, regardless of whether they have used them in the past.

Consistent condom use in conjunction with DMPA use was more prevalent among unmarried women. This is a promising finding, since unmarried women are more likely than married women to have multiple partners,¹⁰ and therefore may be at greater risk of infection with HIV and other STDs. Our findings on marital status are similar to those of studies of condom use among implant users.¹¹

We also found a higher probability of condom use among black DMPA users. A tendency for black women to use condoms more consistently than white women has been reported in other studies,¹² including investigations among implant users.¹³ More frequent use of condoms among black women may be related

to their more positive attitudes toward condoms: Compared with white women, black women have been found to worry more about AIDS, to be more approving of condom use (particularly with a new partner) and to feel less uncertainty about initiating condom use and less embarrassment about buying condoms.¹⁴ The greater combined use of condoms in conjunction with DMPA among black respondents is encouraging, in light of the substantially higher incidence of heterosexually acquired AIDS among black women than among white women.¹⁵

Consistent use of condoms among women using DMPA significantly increased over time. However, only 18% of the women in our study reported using condoms consistently while on DMPA. This figure is lower than condom use rates among pill users,¹⁶ but it is higher than estimates among tubal sterilization patients.¹⁷ The tendency for women relying on tubal sterilization to use condoms less frequently than either pill or DMPA users is not surprising. These women are typically older and more likely to be in stable relationships. They are also likely to have little or no contact with family planning providers, and therefore have few opportunities to receive counseling about the use of condoms for disease prevention. Furthermore, most family planning clinics dispense condoms at no charge to all clients seeking a non-barrier form of contraception.

That women who have more access to condoms and are frequently reminded about the importance of their use may be more inclined to use them in conjunction with their primary method of contraception further emphasizes the potential influence of health care providers in contraceptive decision-making.¹⁸ However, additional strategies need to be developed to encourage condom use among women who have limited or no contact with family planning providers, including women choosing long-term contraceptives such as the implant and sterilization.

As expected, women who had a history of STD infection were more likely than those without such a history to continue use of condoms while on DMPA. Prior experience may engender more conscientious behavior about the use of condoms for disease prevention. This finding, however, contradicts results of studies of condom use among implant users.¹⁹ We know of no reason for this discrepancy.

Consistent with prior research on the influence of reproductive factors on condom use,²⁰ we found a higher probability of consistent condom use among DMPA

Table 3. Adjusted odds ratios (and 95% confidence intervals) for factors associated with condom use among women using DMPA, by selected characteristics

Characteristic	Adjusted odds ratio†
Race/ethnicity	
White	1.0
Black	2.0* (1.1, 3.7)
Hispanic	0.8 (0.3, 2.0)
Marital status	
Married	1.0
Not married	2.2* (1.1, 4.8)
Education	
< high school	1.0
High school	0.8 (0.4, 1.6)
Some college	1.6 (0.8, 3.1)
Religion	
Catholic	1.0
Baptist	1.7 (0.8, 3.5)
No preference	1.3 (0.4, 3.9)
Other	1.0 (0.4, 2.8)
Previous condom use	
No	1.0
Yes	2.7** (1.6, 4.5)
Previous STD	
No	1.0
Yes	1.8* (1.1, 3.0)
Intends future births	
Yes	1.0
No	1.8* (1.1, 3.0)

*Statistically significant at $p < .05$. **Statistically significant at $p < .01$. †Odds ratios are adjusted for all variables, as well as for change in marital status and number of previous abortions.

users who have completed their childbearing than among women using the injectable to delay or postpone a birth. One reason for the higher prevalence of dual method use among women with no desire for more children may be that the cost of an unintended pregnancy is higher for this group than for women who have not completed their childbearing.

This research furthers our understanding of the extent of condom use among women initiating use of DMPA. However, the study has certain limitations that should be addressed. First, placing women who may have had intervals of both consistent and inconsistent condom use in the same category (inconsistent user) as women who have never used condoms while relying on DMPA may have led to an overestimation of the number of inconsistent users. However, the alternative approach (e.g., classifying the former group as consistent users) seemed inappropriate and more problematic. We felt these women could not accurately be described as consistent users, and believed that their pattern of condom use was typical of many women who primarily use nonbarrier contraceptives. Furthermore,

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the majority (92%) of women classified as inconsistent users reported never or rarely using condoms for their entire time on DMPA, indicating homogeneity of this group with respect to condom use.

Second, most of the respondents were seen at public clinics and were, therefore, economically disadvantaged. Because behavioral factors such as condom use may differ with respect to socioeconomic status, the findings reported here cannot be readily generalized to other, nondisadvantaged populations. Further studies are needed to examine the extent of condom use among DMPA users of higher socioeconomic status.

Additional research should also examine the underlying reasons for condom use or nonuse among DMPA users. For example, the influence of partner attitudes and behaviors may be of particular importance. Such information will aid public health workers to better understand the mechanisms involved in the use of prophylactic measures such as condoms and, ultimately, to enhance their consistent use. Meanwhile, based on the findings of our study, we strongly urge reproductive health care professionals to stress the importance of regular condom use to all women requesting injectable contraceptives and to ensure that these women have continued access to condoms.

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