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Which contraceptive side effects matter most? Evidence from current and past users of injectables and implants in Western Kenya

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ABSTRACT

Objectives: The objectives were to assess experiences of menstrual bleeding and nonbleeding side effects among current and past users of injectables and implants and the associations between side effects and method evaluations by women — satisfaction, perceived suitability, the likelihood of future use and intended duration of use.
Study design: We used data on past and current users of injectables and implants from a survey of 1866 married or cohabiting women who participated in the third round of a 2-year prospective longitudinal study conducted in Homa Bay County, Western Kenya. Descriptive and bivariate analysis with χ^2 tests was used to assess statistically significant associations between experience of bleeding/nonbleeding side effects and method-specific attitudes.
Results: Self-reported method-related bleeding problems were high among current and past users of injectables (range 69%–79%) and implants (range 55%–60%) and much more common than nonbleeding side effects. For both methods, experience of either bleeding or nonbleeding side effects reduces positive evaluations, but the conjunction of both types had particularly pronounced consequences. Heavy bleeding was more strongly related to method evaluation (satisfaction and the likelihood of future use; $p < .001$) among past users than other forms of menstrual bleeding disorders. Even among current users, about one third regarded bleeding side effects as very serious. Care-seeking from a healthcare provider for management of contraceptive-related side effects was low among current users (less than 40%) and modest among past users (range 53%–63%).
Conclusions: The results underscore the need to strengthen programs on counseling and information on contraceptive side effects including menstrual bleeding disturbances to improve method satisfaction and reduce discontinuation.
Implication: The experience of contraceptive-related menstrual bleeding and nonbleeding side effects reduces positive evaluation of the method and deters past users from future use of the method.

1. Background

Hormonal contraceptives are regarded as safe and highly efficacious; however, side effects and health concerns may influence user's preference, acceptability, method satisfaction, compliance and continuation [1–5]. Changes in regular menstrual bleeding pattern (irregular bleeding, heavy/prolonged bleeding, amenorrhea) have been clinically documented as major contraceptive side effects [3,6,7]. Bleeding and nonbleeding side effects due to contraception and perceptions thereof vary across individuals, methods and duration of use [1,8]. For instance, intrauterine devices (IUDs) tend to be associated with heavy menstrual bleeding and cramping, while injectables and implants are associated with irregular menstruation and temporary amenorrhea [9,10]. Studies have also documented women's negative experiences with contraceptive-related bleeding problems and their adverse influence on well-being [11–13].

While injectables and implants are the most widely used contraceptive methods in Kenya, they are plagued by high discontinuation rates. The all-cause 12-month discontinuation of injectables is 31% but much lower for implants at 8% [14]. Although evidence from the Demographic and Health Surveys (DHSs) shows that side effects or health concerns are major reasons for conceptive nonuse or discontinuation, their precise nature, perceived severity and consequences in low-income settings are not well understood partly because DHSs use a broad classification of side effects [15]. Thus, it remains uncertain whether a woman's evaluation of a method, for instance, her satisfaction with it, is influenced by the specific nature of bleeding or nonbleeding side effects. Few comparisons of experiences of side effects between current and past users have been undertaken. Most studies focus on current users' perspectives and ignore past users despite the fact that past users comprise a high proportion of women with an unmet need for family planning [16]. Moreover, a focus on current users may provide a misleading impression because they may underreport side effects

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owing to the tendency to align beliefs with behavior [17] or stigma associated with reporting menstrual bleeding problems [18].

In this paper, we assess experiences of menstrual bleeding and nonbleeding side effects (such as headache, dizziness, weight loss/gain, cramps) among current and past users of injectables and implants and their associations with method-specific attitudes [satisfaction, suitability, the likelihood of future use (past users) and length of intended future use (current users) and care-seeking]. Understanding experiences of method-related side effects is essential for improving contraceptive counseling and information programs.

2. Data and methods

2.1. Study setting

We used data from a third round of a 2-year prospective longitudinal study conducted in Homa Bay County, Western Kenya. The county is predominantly rural and has a population of 1.3 million [19]. According to the 2014 Kenya Demographic and Health Survey, Homa Bay County has a high total fertility rate of 5.2 compared with a national average of 3.9, a modest level of contraceptive use among currently married women aged 15–49 years (47%) and a high unmet need for family planning at 26% [14]. Furthermore, the county has a perpetual burden of high unintended pregnancy and overall high HIV prevalence estimated at 21%, the second highest in Kenya [20]. These unfavorable sexual and reproductive health indicators are partly due to poverty, weak health systems, community beliefs and limited information on family planning [21,22]. More information about the study design is published elsewhere [23]. In summary, the aim of the study was to advance knowledge on unmet need for family planning and unintended pregnancy, including contraceptive uptake and continuation. It was observational in nature, with no intervention.

2.2. Sample and data

The study targeted a sample of 2600 women to detect a 30% difference between women with contrasting baseline characteristics in reproductive outcomes (pregnancy, use and nonuse of contraceptives) between study rounds at 95% confidence level and 80% power considering a 45% attrition rate. A two-stage sampling approach was used. Stage one involved selecting a random sample of 12 rural sublocations (the smallest administrative unit in Kenya) with an equal probability from three purposely selected subcounties: Rachuonyo North, Rachuonyo South and Ndhiwa. All households with currently married or cohabiting women aged 15–49 years were then identified, and a list of all individuals in those households was generated to form a sampling frame. In the second stage, a total of 3118 women aged 15–39 were randomly sampled from among 5424 eligible women. Interviews were completed with 2424 women during the first round (78% of those sampled), 2083 women during the second round (86% of those interviewed in the round 1) and 1866 women during third round (91% of those interviewed in round 2).

2.3. Measures

In all rounds, structured interviews that lasted on average 45 min were conducted with eligible women in the local language (Dholuo) by trained female interviewers using electronic-based data capture platform, Open Data Kit (ODK). The questionnaire elicited information on women's background, reproduction, sexual activity, fertility preferences, method-specific attitudes, satisfaction and experiences with contraceptives (pill, injectable, implant, IUD and condoms). During the third round, current and past users were asked to indicate if they had experienced any effect on regular menses from using a specific method. Those who reported experiencing any effect on regular menses were further asked to indicate the most troubling problem (whether it was no bleeding, irregular bleeding, heavy bleeding or any other bleeding problems), its severity and whether they had sought advice or treatment for the bleeding problem from a health provider. A similar sequence of questions was asked about nonbleeding side effects. The study also sought women's opinions on overall satisfaction with the method, the suitability of the method for someone like her, the likelihood of future use (past users) and the length of intended use (current users).

2.4. Analysis

We used descriptive statistics (frequency and percentage distribution) and cross-tabulation with χ^2 test to examine experiences of method-related bleeding and nonbleeding side effects and their consequences. We used $p < .05$ to indicate the statistical significance associations with 95% confidence intervals. All analysis was conducted using Stata® version 15.1.

3. Ethics approval and consent to participate

Ethical approvals for the study were granted by the Observational/Interventions Research Ethics Committee of London School of Hygiene and Tropical Medicine, the Institutional Review Board of the Population Council and Kenyatta National Hospital/University of Nairobi Ethics and Research Committee. The National Commission for Science, Technology and Innovation granted the research permit for the study. All respondents provided written informed consent before participating in the study.

4. Results

4.1. Background characteristics

A total of 1512 women (81% of 1866 interviewed in round 3) and 792 women (42% of 1866 interviewed in round 3) had ever used injectables and implants, respectively. Most women were aged 25–39 years, had no schooling or had incomplete primary level of education, and wanted no more children. About a third of women who had ever used injectables were currently using implants, and a fifth of those who had ever used implants were using injectables in round 3 (Table 1).

Table 1
Background characteristic of married or cohabiting women aged 15–39 who had ever used injectables and/or implants at round three in Homa Bay, 2016

Characteristics	Injectables *n* (%)	Implants *n* (%)
Age (years)		
15–24	465 (30.8)	303 (38.3)
25–39	1047 (69.2)	489 (61.7)
Education		
No schooling/some primary	653 (43.2)	341 (43.1)
Primary complete	506 (33.5)	268 (33.8)
Secondary or higher	353 (23.3)	183 (23.1)
Fertility preference		
Want to soon/want within 2 years/undecided	227 (15.0)	110 (13.9)
Want no more	705 (46.6)	409 (51.6)
Want to wait 2 years or more	580 (38.4)	273 (34.5)
Method currently using at round 3		
Injectables	558 (36.9)	145 (18.3)
Implants	341 (22.6)	424 (53.5)
Other methods	216 (14.3)	67 (8.5)
Not using	397 (26.3)	156 (19.7)
Total number of women [*N*][a]	1512 (100.0)	792 (100.0)

[a] *N*s does not sum to 1866 due to women being able to use more than one method.

Table 2
Proportion of women who reported experiencing bleeding and nonbleeding side effects among current and past users of injectable and implant

	Injectable			Implant		
	Current users	Past users		Current users	Past users	p value
	($n = 558$) %	($n = 954$) %	p value	($n = 424$) %	($n = 368$) %	
Percentage who experienced any effect on regular menses from using [method]	69.0	76.0	.003	54.5	60.3	.097
The most troubling bleeding effect	($n = 385$)	($n = 725$)		($n = 231$)	($n = 222$)	
No bleeding	36.1	26.2		25.1	18.9	
Irregular bleeding	43.9	32.7	<.001	52.4	34.7	<.001
Heavy bleeding	17.7	36.4		20.8	40.5	
Others	2.3	4.7		1.7	5.9	
Perceived seriousness of the bleeding side effect						
Very serious	27.3	57.7		34.6	64.9	
Moderately serious	36.9	25.9	<.001	35.5	23.0	<.001
Not serious	35.8	16.4		29.9	12.2	
Percentage who sought advice or treatment for bleeding side effects	37.9	52.7	<.001	38.5	63.1	<.001
	($n = 558$)	($n = 954$)		($n = 424$)	($n = 368$)	
Percentage who experienced nonbleeding side effects	31.5	49.5	<.001	31.1	44.0	<.001
Other most troubling other side effects	($n = 176$)	($n = 472$)		($n = 132$)	($n = 162$)	
Headaches	6.3	8.3		6.8	8.0	
Dizziness	14.8	15.7		15.9	20.4	
Stomach pains/cramps	19.3	17.2		13.6	10.5	
Fatigue	8.0	8.9	.098	9.1	15.4	.020
Nausea	3.4	1.7		2.3	0.6	
Weight loss	4.6	12.1		8.3	18.5	
Weight gain	1.7	3.2		2.3	2.5	
Decrease in libido	4.6	4.0		3.8	3.1	
Others	37.5	29.0		37.9	21.0	
Perceived seriousness of other side effects						
Very serious	42.1	65.7		37.1	70.4	
Moderately serious	47.7	31.1	<.001	49.2	24.1	<.001
Not serious	10.2	3.2		13.6	5.6	
Percentage who sought advice or treatment for other side effects	43.2	52.3	<.001	31.1	63.6	<.001

Table 3
Satisfaction, perceived suitability and the likelihood of future use and duration of intended use reported by current and past users of injectables or implants by type of side effect experienced (percentages)

	Current users					Past users				
	Bleeding problems only	Nonbleeding only	Both bleeding and nonbleeding	No side effects	p value	Bleeding problems only	Nonbleeding only	Bot bleeding and nonbleeding	No side effects	p value
Injectables										
% satisfied with method	89.0	81.5	71.1	98.6	<.001	58.0	43.9	23.7	73.0	<.001
% who think method is suitable for someone like her	94.1	92.6	87.3	98.0	.003	66.8	65.2	37.9	81.0	<.001
% very or somewhat likely to use in the future	NA	NA	NA	NA	NA	56.7	57.6	38.7	73.6	<.001
% intending to stop using the method within 2 years	19.7	14.8	27.0	23.3	.481	NA	NA	NA	NA	NA
Number of women (N)	236	27	149	146		319	66	406	163	
Implants										
% satisfied with method	85.5	69.6	62.8	97.3	<.001	44.6	25.0	19.2	50.0	<.001
% who think method is suitable for someone like her	85.5	93.5	74.4	95.9	<.001	45.7	43.8	20.0	56.1	<.001
% very or somewhat likely to use in the future	NA	NA	NA	NA	NA	39.1	28.1	25.4	57.0	<.001
% intending to stop using the method within 2 years	21.5	34.8	25.6	21.8	.313	NA	NA	NA	NA	NA
Number of women (N)	145	46	86	147		92	32	130	114	

NA, not asked.

Table 4
Severity, satisfaction, perceived suitability and the likelihood of future use, duration of intended use and care-seeking by specific menstrual bleeding problem among current and past users of injectables and implants (percentages)

	Current users			p value	Past users			p value
	No bleeding	Irregular Bleeding	Heavy bleeding		No bleeding	Irregular Bleeding	Heavy bleeding	
Injectables								
% reporting the bleeding effect as 'very serious'	22.9	14.6	64.8	<.001	45.8	39.6	80.0	<.001
% who sought treatment	37.1	32.8	49.3	.013	45.3	46.3	62.1	<.001
% satisfied with method	90.7	85.4	56.3	<.001	53.7	51.3	18.6	<.001
% reporting the method is suitable for someone like them	97.1	94.7	71.8	<.001	62.6	64.2	31.2	<.001
% very or somewhat likely to use in future	NA	NA	NA	NA	60.0	56.3	29.5	<.001
% intending to stop using the method within 2 years	19.6	22.9	28.2	.225	NA	NA	NA	
Number of women (*N*)	139	169	68		190	237	264	
Implants								
% reporting the bleeding effect as 'very serious'	32.8	19.8	70.6	<.001	40.5	39.0	94.0	<.001
% who sought treatment	29.3	32.2	62.8	<.001	52.4	50.7	76.0	.001
% satisfied with method	79.3	86.0	52.9	<.001	54.8	45.5	8.0	<.001
% reporting the method is suitable for someone like them	82.8	88.4	62.8	.001	42.9	49.4	12.0	<.001
% very or somewhat likely to use in future	NA	NA	NA	NA	52.4	44.2	12.0	<.001
% intending to stop using the method within 2 years	10.3	25.8	31.4	.346	NA	NA	NA	
Number of women (*N*)	58	121	48		42	77	90	

4.2. Experience of bleeding and nonbleeding side effects

The proportion of women reporting bleeding side effects was slightly higher among past users than current users for both methods (range 55%–76%) (Table 2). The most commonly reported troubling bleeding effect among past users of injectables or implants was heavy bleeding followed by irregular bleeding; the majority considered the bleeding effect to be very serious. Current users were also concerned about irregular bleeding. Nonbleeding side effects (mainly dizziness, pain/cramps, fatigue and weight loss) were also common and more likely to be reported among past users than current users.

4.3. Experience of side effects and method evaluation

In Table 3, we assess the associations between the experience of bleeding and nonbleeding side effects and three indicators of women's overall evaluation of the method: satisfaction, method suitability, and the likelihood of future use (among past users) and the length of intended use (among current users).

For past users of injectables, evaluations were strongly related to side effects. Satisfaction, perceived suitability and likelihood of future use were highest among women who experienced no side effects, intermediate for women who experienced bleeding problems only or nonbleeding problems only, and lowest for women who experienced both types of side effect. For current injectable users, positive evaluations were much higher than for past users, and the associations with side effects were less striking.

The results for past implant users showed similar associations with side effects as recorded for past injectables users, but the levels of positive evaluations were slightly lower across all three indicators. Method evaluation among current users of implants who experienced no side effects was similarly high as for injectables. There was no clear relationship between side effects and length of intended future.

Reported severity of bleeding, satisfaction, perceived suitability and likelihood of future use (among past users) were significantly associated with the type of menstrual bleeding problem (Table 4). Generally, heavy bleeding had greater consequences than amenorrhea or irregular bleeding, although the denominators are too small for a confident verdict. For both current and past users of injectables or implants, the proportion of women reporting heavy bleeding as "very serious" was significantly higher than those who experienced amenorrhea or irregular bleeding. For past injectables users, the proportion of women satisfied or expressing the likelihood of using the method again in the future was significantly lower among those who experienced heavy bleeding than no bleeding or irregular bleeding. The results for past implant users were even more pronounced. The proportion of women reporting the likelihood of future use was significantly lower among those who had experienced heavy bleeding than amenorrhea or irregular bleeding. While heavy bleeding was less commonly reported among current users than past users, the effect of this problem on method evaluation was similar including the intention to stop use within 24 months.

4.4. Care-seeking for contraceptive-related menstrual bleeding and nonbleeding side effects

For both injectables and implants, care-seeking from a healthcare provider for management of contraceptive-related menstrual bleeding problems was low among current users (range 38%–39%) and moderate among past users (range 53%–63%). Similar patterns were observed for nonbleeding side effects (Table 2). Furthermore, care-seeking for method-related menstrual bleeding irregularities was significantly higher for women concerned about heavy bleeding than no bleeding or irregular bleeding.

5. Discussion

The vast body of evidence on contraceptive-related side effects is mainly drawn from clinical trials, which tend to ignore the implication of diverse social and cultural contexts. Our study contributes to the literature on reasons for unmet need for contraceptives by providing a detailed analysis of self-reported method-related side effects and how these experiences are linked to method-specific attitudes in a setting characterized by pervasive health-related myths and misconceptions about methods [22,24].

Our findings show that self-reported method-related menstrual bleeding problems are high among both current and past users of injectables (range 69%–79%) and only slightly less common for implants (range 55%–60%). Similar patterns have been observed in several studies in both high- and low-income settings [1,4,6,25]. Injectable or implant use was associated with changes in regular menstrual patterns (heavy bleeding, irregular bleeding and amenorrhea) that may influence method satisfaction, adoption or continuation and, indeed, may impact women's well-being [6,11].

Nonbleeding side effects were much less commonly reported than bleeding side effects, and most women reporting these side effects also reported bleeding problems. Unlike method-related menstrual

bleeding problems, the prevalence of nonbleeding effects was closely similar for both injectables and implants regardless of use status. Compared with current users, past users of either method were slightly more likely to report menstrual bleeding or nonbleeding disturbance but twice as likely to report heavy bleeding as the most troubling effect. These differences are not surprising, as many past users will have stopped the method because of side effects or rationalize their discontinuation, leading to overreporting. Moreover, the theory of cognitive dissonance (the tendency to align beliefs with behavior) [17] may have resulted in underreporting of side effects among current users. The same considerations help to explain differences in perceived severity of side effects — past users for both methods were approximately twice more likely than current users to regard both menstrual bleeding and nonbleeding side effects as "very serious." Nevertheless, even among current users, approximately one third judged both menstrual and nonmenstrual side effects to be very serious. Clearly, willingness to continue to use a method does not imply that there are no problems or concerns. Some women may express serious dissatisfaction with bleeding and other side effects disturbance and opt to discontinue or switch to less effective methods, while others may tolerate these problems as a trade-off for the benefit of effective pregnancy-prevention [26,27].

The major contribution of the analysis concerned the links between experience of side effects and attitudes towards the method. The experience of either type of side effect reduces positive evaluations of the method, but the conjunction of both types has particularly pronounced consequences. The likelihood of future use is an especially important indicator given that much unmet need for family planning stems from discontinued users [16]. Satisfaction tends to be lower among women who were experiencing both types of side effects than those reporting no effects. Notably, attitudes among past users of implants were less positive than attitudes among past users of injectables. We speculate that women who stop implant use are more deeply dissatisfied with the method than is the case for those who stop using injectables because discontinuation of implants requires a conscious effort, whereas discontinuation of injectables requires nothing more than inertia [9].

Because of the detailed information collected about menstrual problems, we contrasted the links between different types of menstrual problems and attitudes towards methods. The results were clear-cut. Heavy bleeding was much more likely to be regarded as very serious than irregular or no bleeding, and it was much more strongly associated with negative evaluations of the method. These results were consistent for past and current users of both methods.

Despite high prevalence of contraceptive-related menstrual problems, care-seeking from a healthcare provider for management of the conditions was low among current users (less than 40%) and moderate among past users (range 53%–63%). Care-seeking for side effects was higher among past users than current users perhaps because the former were more likely to have seen a provider to discontinue or switch methods. Low care-seeking may also be due to factors such as difficulties in accessing care, lack of awareness of treatment options or fear due to stigma [18,28]. An important finding of our study is that care-seeking was associated with the type of menstrual problems, being more likely among women experiencing heavy bleeding than no or irregular bleeding (for current and past users of both methods). It seems likely that heavy or prolonged bleeding is considered a greater health hazard than other forms of menstrual changes, which propels women to seek care [12,15].

The study has some limitations. Information on bleeding irregularities was self-reported without clinical verification. There is a potential for response bias; reported bleeding problems could be due to a nocebo effect (negative expectations which lead to inflated reports) [29,30], lack of understanding about normal bodily fluctuations or poor compliance [31]. However, the findings are consistent with evidence from previous studies. Findings are based on past users of injectables and implants and do not account for method(s) participants were using at the time of survey which may influence perceptions about these two methods. The analysis is descriptive and cross-sectional based on data from a rural setting; hence, the results may not be generalized to other settings. Nonetheless, our study provides a detailed quantitative analysis of the links between experiences of bleeding and nonbleeding side effects vis-à-vis method evaluation.

In conclusion, overall method satisfaction, perception of method suitability and the likelihood of future use (past users) were statistically significantly associated with self-reported type of menstrual bleeding. Heavy bleeding had more serious consequences than other types of disturbances. The findings suggest a need for strengthening programs on counseling and information on contraceptive side effects including bleeding and nonbleeding side effects to improve method satisfaction and reduce discontinuation.

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