Method-specific Attributes Associated with the Choice of Future Contraception among Women Aged 15-45 Years in Refugee Settlements in Uganda

Abstract

Background: Factors underlying reproductive decisions, including contraceptive method choice are poorly understood, especially in humanitarian settings where sexual and reproductive health (SRH) outcomes are greatly affected due to reduced access and utilization of SRH services.

Aim: We examined method-specific attributes associated with the choice of future contraception among women and girls in refugee settlements in Uganda

Method: We analyzed representative household baseline data on 2264 women and girls aged 15–45 years conducted in April 2024 in Kiryandongo and Kyangwali refugee settlements. We used cross-tabulation with chi-square test and conditional logit analysis to examine associations between method attributes (perceptions of effectiveness, convenience, health effects, satisfaction with past use, social network experiences, partner approval, and long-term safety) and intention to use injectable, pill, or implant among the 263 fecund women not currently using a method.

Result: Among contraceptive nonusers (n=1486), 32% intended to use a method within the next 12 months or later. Injectable is the most preferred future method (39%) followed by implants (25%) and pills (17%). Concerns about interference with menstruation, unpleasant side effects, and safety for long-term use were common across all three methods (range 58%-90%). The likelihood that a woman intended to use a method in future was positively associated with her perception that it is easy to access (Adjusted Odds Ratio [AOR]=2.06), easy to use (AOR=4.00), safe for longer use without a break (AOR=4.85), satisfaction with past use (AOR=2.84), and positive experience of use by a woman's social network (AOR=1.94).

Conclusion: Intention of contraception among non-users in refugee settlements is low, coupled with widespread negative perceptions of available methods. Future method choice is shaped by perceived convenience, long-term safety of the method, social network satisfaction, and past experiences. These findings highlight the need to improve counseling to counter unfounded negative beliefs and to expand access to a range of contraceptive methods

Introduction

The United Nations High Commissioner for Refugees (UNHCR) reported that by the end of 2023, an estimated 117 million people globally were displaced due to conflict, human rights abuses, natural disasters, and persecution[1]. At least, half of the displaced population are women and adolescent girls who require sexual and reproductive health (SRH) services[2]. Globally, an estimated 121 million unintended pregnancies occurred annually between 2015 and 2019, with the highest rates in sub-Saharan Africa [3]. The extent and consequences of unintended pregnancy such as unsafe abortion are likely to be exacerbated in humanitarian settings. Women in refugee settings are vulnerable to poor SRH outcomes due to the heightened risk of sexual violence [4]. For instance, a study in Rwamwanja refugee settlement in Uganda found a high prevalence of unintended pregnancy as a result of sexual violence [5].

Global health experts developed the Minimum Initial Service Package (MISP) for SRH in emergency and protracted humanitarian settings[6]. Preventing unintended pregnancy by ensuring the availability of a range of long-acting reversible and short-acting contraceptive methods, including emergency contraception, is a core element of the MISP. However, access to and coverage for contraception services in humanitarian settings remain highly suboptimal due in part to socio-cultural, environmental, and political factors[4]. In addition, method-related barriers such as health concerns, myths, misconceptions, and cultural taboos may lead to non-use or undesirable contraceptive discontinuation, irregular usage that impacts effectiveness, or switching methods [7].

Method-specific beliefs are key in the decision-making process regarding contraception, including the intention-to-use and method-choice [8, 9]. Intention-to-use contraception significantly impacts contraceptive outcomes such as uptake, adherence, and continuation, thereby preventing unintended pregnancies [10, 11]. Furthermore, in line with psychological and behavioral theories, intention-to-use is considered a person-centered measure of demand reflecting self-identified motivations and preferences, as well as the psychosocial processes that shape behavior [12, 13]. It directly captures women's stated preferences regarding contraception, their perception of pregnancy risk, and their interest in using contraception in the future.

Method attributes— such as satisfaction with past use, positive experience of use by a woman's social network, husband or partner approval, perceived effectiveness, convenience (i.e., ease of use and access), health effects concerns (i.e., interference with menses, side effects, and infertility), and safety for long-term use—are associated with intention to use and choice of a future method [14-16]. Additionally, sociodemographic characteristics such as age, fertility preferences, parity, family size, and cultural context are associated with future method choice [17, 18]. Most studies on factors associated with women's preferences for certain contraceptive methods are based on development settings. However, factors underlying reproductive decisions, including contraceptive method choice are poorly understood, especially in humanitarian settings where SRH outcomes are greatly affected due to reduced access and utilization of SRH services and supplies. This lack of evidence hampers the development of evidence-based interventions and policies to address low contraceptive use and unintended pregnancies, particularly those that consider the unique circumstances of women and girls in these settings.

In this study, we examined method-specific beliefs (perceptions of effectiveness, convenience, health effects, satisfaction with past use, social network experiences, husband/partner approval, and long-term safety) about pills, injectables, and implants among

non-users. We also evaluated the relative importance of these factors in relation to the preferred future method among non-users who are aware of pills, injectables, and implants.

Data and Methods

Context

Uganda is the third-largest refugee-hosting country in the world, with an estimated refugee population of 1.7 million as of May 2024[19]. The majority of this population are women and adolescent girls in need of SRH services. The majority of refugees in Uganda are from South Sudan (55%) and the Democratic Republic of Congo (31%), with smaller numbers from Somalia, Burundi, Rwanda, and other countries [19]. Uganda's progressive legal framework grants refugees access to social services, including health and education. [20]. The provision of health services, including SRH, is guided by the National Integrated Response Plan for Refugees and Host Communities, in alignment with the National Health Policy. These services are delivered through public and private facilities, supported by UNHCR and its partners.

This paper is based on a representative, household survey of women aged 15-45 years living in two refugee settlements, Kiryandongo and Kyangwali, in Uganda. As of July 2024, Kiryandongo hosted approximately 119,129 refugees, mostly from South Sudan (98%), while Kyangwali had about 139,935 refugees, primarily from the DRC (96%)[19]. These settlements were selected in consultation with UNHCR-Uganda and the OPM to represent major refugee groups.

Study Design:

The analysis draws on baseline data from a one-year prospective study involving a cohort of randomly selected women and girls aged 15–45 years living in Kiryadongo and Kyangwali refugee settlements. The study that generated data for this paper aims to generate evidence on innovative solutions for addressing unintended pregnancy in refugee settings. The upper age limit of 45 years was chosen to ensure follow-up interviews with the women while they are still within reproductive age. Baseline data were collected from March to May 2024.

Sampling

A two-stage sampling design was used. First, zones were randomly selected from the two settlements, and then household listings were created, from which eligible women and girls were randomly selected. A sample size of 3,019 women aged 15-45 was targeted to detect differences of 20% - 50% in two proportions at a 95% confidence level and 80% power, based on a formula developed by Fleiss and colleagues [21]. Sample size calculations assumed that both exposure/predictor and outcome variables are dichotomous, for example, assuming 20% in the unexposed group and 40% in the exposed group having a positive outcome, such as the current use of pills or injectables to prevent unintended pregnancy. Interviews were completed with 2,264 women.

Measures

The questionnaire collected data on women's sociodemographic characteristics, reproductive history, contraceptive use, and fertility intentions. The outcome variable for this study was whether women intended to use a contraceptive method. Participants were asked if they planned to use contraception within the next 12 months or at any time in the future. Women who responded positively were then asked which method they intended to use.

All women who had heard of a specific method were asked about their perceptions of eleven attributes of that method, regardless of their status of usage. Women were asked if the

method was easy to obtain and easy to use. Perceived effectiveness was determined by asking whether they considered the method "very effective at preventing pregnancy." Five items related to health concerns and safety were also assessed: whether the method was likely to cause (a) serious health problems, (b) unpleasant side effects, (c) disruption to regular menses, (d) long-term infertility, or (e) dangers from long-term continuous use. Notably, beliefs (b) and (c) are valid, while beliefs (a), (d), and (e) are erroneous. Additionally, due to the importance of social influences women were also asked if their friends, relatives, and neighbours (social network) had used the three methods and whether their experience had been satisfactory.

Analysis

We used descriptive statistics to examine the characteristics of all interviewed women and crosstabulation with a Chi-square test to assess method-specific beliefs about three popular methods (pills, injectables, and implants) among non-users aware of these three methods. We also assessed which perceived method-specific attributes predict future intentions to use injectables, implants, or pills among women who were not currently using a method but intended to do so in the next 12 months or at any time in the future and were aware of all three methods (n=263).

We applied McFadden's conditional discrete choice model to assess the association between method-specific attributes and the intention to use implants, injectables, or pills. This model, commonly used in economic analysis of choice, has been applied to analyse contraceptive choices. It allows the inclusion of two types of variables in one regression equation: (1) characteristics of the woman, such as age, education level, fertility preferences, and baseline pregnancy status, which vary only between respondents, and (2) method-specific beliefs, which vary between respondents and methods. Each method attribute or belief is represented by a single coefficient indicating its association with future method choice. For respondents' characteristics, arrays of coefficients are provided for effects on two pairwise method choices: implant versus injectable and pill versus injectable. We used $p<.05$ to indicate the statistical significance with 95% confidence intervals. Analysis was conducted using Stata version 16, using the *asclogit* procedure to estimate the discrete choice regressions.

Ethical considerations

Ethical approval was provided by the Population Council Institutional Review Board and the Mildmay Uganda Research Ethics Committee (MUREC) (REF 0109–2023). The research was also granted regulatory approval by the Uganda National Council for Science and Technology (REF SS2085ES). All participants provided consent, electronically recorded on the ODK platform.

RESULT

Background characteristics

A total of 2,264 women were interviewed, of whom 45% and 55% were from Kiryandongo and Kyangwali refugee settlements, respectively (Table 1). Nearly half of the women were aged 25-34 years (44%) and had no formal education (46%). About 60% were married or living with a partner, 28% did not want to have (another) child and 11% were pregnant. Only

20.7% were currently using any method. Among those using a method, 23% were using traditional methods, 22% condoms 19% injectables, and 13% implants. More than half (55%) of the respondents were originally from the Democratic Republic of Congo (DRC), 44% were from South Sudan, and the rest were from other countries.

Table 1: Percentage distribution of women and girls aged 15–45 year, 2024

	Current contraceptive use		
Age	**Using (N=469)**	**Not using (N=1795)**	**All (N=2264)**
15-24	27.3	25.5	25.9
25-34	48.8	42.5	43.8
34-45	23.9	32.0	30.3
Educational attainment			
No education	37.1	48.3	46.0
Primary incomplete	32.6	33.3	33.2
Primary complete/some	22.2	15.8	17.1
Secondary complete +	8.1	2.6	3.8
Current marital status			
Not married/living with a man	30.9	43.3	40.8
Married/living with a man	69.1	56.7	59.2
Fertility preference			
Want a child: soon/within 2 years/undecided	11.5	14.4	13.8
Want a child: wait 2-5 years	50.3	30.2	34.4
Want a child: wait 5+ years	11.9	23.1	20.8
Does not want a/another child	26.2	28.8	28.3
Others†	0.0	3.5	2.7
Current contraceptive use			
No method	na	86.2	68.4
Implant	13.2	na	2.7
Injectables	19.2	na	4.0
Condom	21.8	na	4.5
Other modern methods*	14.3	na	3.0
Trad methods	23.0	na	4.8
Others	8.5	na	1.8
Currently pregnant	na	13.8	10.9
Country of origin			
South Sudan	46.7	42.9	43.7
DRC	51.2	56.0	55.0
Others	2.1	1.1	1.3
Settlement			
Kiryandogo	49.3	44.1	45.2
Kyangwali	50.8	55.9	54.8
Total	20.7	79.3	100.0

Note: †Other responses include “sterilized; *Other modern methods include Sterilization, intrauterine device, emergency pill.

Among contraceptive nonusers, 96% were neither infertile nor postmenopausal (Table 2). Of these, 32% intended to use a contraceptive method within the next 12 months or later. Among those with contraceptive intentions, 39% preferred injectables, 25% implants, 17% pills, 9% other modern methods, 6.6% traditional methods, and 4% were undecided.

TABLE 2. Percentage distribution of contraceptive nonusers, by selected characteristics

Characteristic	N	%
Currently pregnant	(N=1795)	
Yes	247	13.8
No	1548	86.2
Unable to become pregnant/postmenopausal	(N=1548)	
Yes	62	4.0
No	1486	96.0
Intends to use a method of contraception†	(N=1486)	
Yes, in the next 12 month	304	20.5
Yes, later on	170	11.4
No	926	62.3
Don’t know/unsure	86	5.8
Preferred method of contraception‡	(N=474)	
Implant	120	25.3
Injectable	185	39.0
Pill	79	16.7
Other modern methods	41	8.7
Traditional methods	30	6.3
Don’t know/unsure	19	4.0

Perceived Contraceptive Attributes

Table 2 summarizes the views and experiences with pills, injectables, and implants among non-users who are fecund, have heard of all three methods, and intend to use one of these methods in the next 12 months or later (n=230). The proportion of women who believed that injectables are easy to obtain, effective, and easy to use was significantly higher than for implants and pills (range 76-89%).

There were significant differences in perceived health-related concerns by methods. Concerns about unspecified serious health problems were highest for implants (29%) and injectables (18%), compared to pills (10%). Similarly, concerns about interference with menstruation were highest for implants and injectables (both at 58%) compared to pills (38%). Concerns about unpleasant side effects were common across all three methods (range 62%-76%). The majority of women (over 90%) believed that it was unsafe to use implants, injectables, or pills long-term without taking a break. More than a quarter of the women (26%) believed that implants cause infertility, compared to 17% for injectables and 22% for pills.

The proportion of women reporting knowing someone in their social network who had used the method was significantly higher for injectables and implants (range 68–72%) than for pills (54%). However, perceived satisfaction among social networks was lowest for implants (43%), followed by injectables (59%) and pills (60%). Among women who intended to use

any of the three methods in the future, those who had used the method and were satisfied were higher for injectables and pills (range 15-17% compared to implants (7%).

Table 3: Method-specific beliefs among nonusers (n=263) who reported knowing about pills, injectables and implants

	Implant %	**Injectable** %	**Pills** %	
Perceived convenience and effectiveness				
Easy to obtain	68.4	87.8	77.6	**<0.001**
Effective at preventing pregnancy	83.3	87.5	73.8	**<0.001**
Easy to use	58.6	76.4	56.7	**<0.001**
Health effects beliefs				**<0.001**
Causes serious health problems	29.3	17.5	9.5	**<0.001**
Interfere with menstruation	58.2	57.8	38.4	**<0.001**
Causes unpleasant side effects	76.1	62.4	61.6	**<0.001**
Unsafe for long-term use (without a break)	91.6	95.4	94.7	0.115
Cause infertility	26.2	17.1	22.4	**0.040**
Husband approval and social network experiences				
Husband approves of method	25.1	27.0	25.1	**0.868**
Have a friend/relative/neighbor who has used the method	68.4	71.9	54.4	**<0.001**
Friends/relatives/neighbors are satisfied with the method†	42.8	58.7	60.1	**0.002**
Past use and satisfaction	6.8	16.7	14.5	**<0.001**

*N include women aware of injectable, implant, and pill

Intention to Use Injectable, implants, or pills

Table 4 presents the results from the conditional logit regression analysis of non-users who expressed an intention to use injectables, implants, or pills in the next twelve months or later. In Model I (unadjusted), all attributes, except for no interference with menstruation, were associated with method choice. Ease of use and safety for long-term use had the strongest association with the intention to use injectables, implants, or pills. This was followed by attributes such as ease of obtaining the method, use satisfaction within the social network, absence of serious health problems, and effectiveness in preventing pregnancy (OR range 2.90-3.90), as well as the absence of long-term fertility impairment and unpleasant side effects (OR range 1.90-2.30). Satisfied past use was associated with increased odds (OR=3.88;95% CI=2.24-6.72) of intending to use of injectables, implants, and pills compared to women who had never used any of these methods. If a woman's husband/partner approved the method, she was four times (OR=4.17;95% CI=1.68-10.35) more likely to indicate an intention to use the method compared to her counterparts whose husbands/partners disapproved.

In Model II (adjusted), only four attributes remained significantly associated with the intention to use injectables, implants, or pills in the next twelve months or later. Women who perceived the method to be easy to obtain or use had 2.06 (95%CI=1.04-4.08) times and 4.00 (95%CI=2.15-7.42) times higher odds, respectively, of indicating an intention to use a

method. Similarly, women who perceived the method as safe for long-term use (without a break) had increased odds (OR=4.85;95%CI=1.84-12.82) of indicating an intention to use a method compared to those who perceived otherwise. The results also show that if members of a woman's social network tried and were satisfied with any of the methods, the odds of choosing that method were increased (OR=1.94;95%CI=1.18-3.19) compared with women with no or whose social network tried but had an unsatisfactory experience with the method. Additionally, women who had ever used a method and were satisfied had increased odds (OR=2.84;95%CI=1.47-5.50) times higher of choosing the method than women who had never used the method.

The lower panels of Table 4 display the effects of respondent characteristics on method choice, first comparing the choice of implant versus injectable and then the choice of pill versus injectable. Notably, there were no statistically significant differences in the choice of implants or pills over injectables based on age, fertility preference, and settlement. However, the odds of choosing pills over injectables were reduced for women with incomplete primary education compared to those with no education.

Table 4: Conditional logit regression model showing the odds of intending to use injectables, implants, or pills by perceived method attributes, past use and satisfaction, and selected characteristics

Method Choice-Injectable, Pill or Implant	**Model I**		**Model II**	
Effects of Method Attributes	**Crude OR [95%CI]**	**P>|z|**	**AOR [95%CI]**	**P>|z|**
Easy to obtain	3.89[2.23,6.76]	**0.000**	2.06[1.04,4.08]	**0.039**
Effectively prevents pregnancy	2.94[1.68,5.13]	**0.000**	1.59[0.81,3.12]	0.174
Easy to use	6.57[3.96,10.90]	**0.000**	4.00[2.15,7.42]	**0.000**
Absence of serious health problems	3.00[1.81,4.98]	**0.000**	1.38[0.69,2.77]	0.361
No interference with menstruation	1.42[0.96,2.10]	0.082	1.26[0.75,2.11]	0.384
Absence of unpleasant side effects	1.93[1.28,2.93]	**0.002**	0.87[0.50,1.50]	0.607
Safe for long-time use (without a break)	6.11[2.77,13.46]	**0.000**	4.85[1.84,12.82]	**0.001**
No long-term fertility impairment	2.27[1.25,4.12]	**0.007**	0.86[0.39,1.90]	0.711
Social network tried and satisfied	3.03[2.06,4.45]	**0.000**	1.94[1.18,3.19]	**0.009**
Husband approves method (ref: Dissapproves)				
Approves	4.17[1.68,10.35]	**0.002**	2.38[0.86,6.62]	0.096
No husband	0.61[0.19,1.89]	0.388	0.58[0.15,2.24]	0.433
Past use and satisfaction (Ref: Never used)				
Past user and satisfied	3.88[2.24,6.72]	**0.000**	2.84[1.47,5.50]	**0.002**
Past user and dissatisfied/mix/neither	0.80[0.41,1.56]	0.511	1.04[0.45,2.40]	0.921
Injectable (Reference group)				
Effects on Choice of Implant (vs. Injectable)				
Age group (Ref: 15-24 years)				
25-34 years	1.22[0.64,2.36]	0.544	0.78[0.34,1.80]	0.557
35-45 years	1.64[0.73,3.67]	0.230	1.58[0.52,4.73]	0.418
Educational attainment (Ref: no education)				

Primary incomplete	0.57[0.29,1.10]	0.093	0.44[0.19,1.04]	0.061
Primary complete/some secondary	1.38[0.63,3.00]	0.417	1.45[0.49,4.26]	0.499
Secondary complete +	0.73[0.20,2.62]	0.625	0.26[0.04,1.71]	0.160
Fertility Preference (Ref: Want to soon/want within 2 years/undecided)				
Want to wait 2-5years	1.39[0.53,3.69]	0.505	1.18[0.34,4.06]	0.791
Want to wait 5+ years	0.83[0.25,2.76]	0.763	0.49[0.11,2.19]	0.348
Want no more	1.75[0.62,4.96]	0.291	1.47[0.39,5.58]	0.572
Settlement				
Kiryandogo				
Kyangwali	0.71[0.40,1.27]	0.250	0.54[0.23,1.22]	0.137
Effects on Choice of Pill (vs. Injectable)				
Age group (Ref: 15-24 years)				
25-34 years	1.13[0.56,2.27]	0.735	1.21[0.49,2.98]	0.673
35-45 years	0.64[0.22,1.83]	0.402	0.94[0.24,3.70]	0.932
Educational attainment (Ref: no education)				
Primary incomplete	0.42[0.20,0.89]	**0.023**	0.33[0.13,0.87]	**0.025**
Primary complete/some secondary	0.83[0.34,2.04]	0.690	0.72[0.21,2.47]	0.605
Secondary complete +	0.42[0.08,2.11]	0.290	0.20[0.02,1.70]	0.141
Fertility Preference (Ref: Want to soon/want within 2 years/undecided)				
Want to wait 2-5years	1.42[0.51,3.95]	0.506	1.24[0.37,4.11]	0.723
Want to wait 5+ years	0.97[0.28,3.35]	0.961	0.51[0.12,2.23]	0.373
Want no more	0.53[0.15,1.93]	0.337	0.42[0.09,1.98]	0.275
Settlement				
Kiryandogo				
Kyangwali	1.27[0.64,2.52]	0.494	0.62[0.24,1.63]	0.336

Discussion

Perceptions and experiences with available contraceptive methods, along with the advice provided by service providers, are crucial to fulfilling reproductive rights. [22]. However, there is limited understanding of how women's opinions, perceptions of methods, and past experiences with contraceptive use impact method choices in humanitarian contexts where the risk of unintended pregnancy is heightened due to high cases of sexual violence and disruptions in access to essential SRHR services. This study examined method-specific attributes associated with future contraception choices among women aged 15-45 years who are non-users in refugee settlements in Uganda. Findings from this study could inform the design of effective SRHR counselling interventions in humanitarian settings.

Contraceptive use is low in the study setting, with only one in five (20%) women of reproductive age using any method, which is lower than the national average of 33% which excluded refugee settlements [23]. Although precise estimates are unavailable, other studies have found the modern contraceptive prevalence rate (mCPR) among refugee women to be lower than that of the host communities [24]. Among women currently using contraception, many relied on traditional methods (23%) such as rhythm (also known as periodic abstinence), withdrawal, and other folkloric methods, which have relatively high failure rates.

This finding highlights the challenges women face while accessing more effective modern methods in these settings. Language barriers, lack of information, women's and partners' disapproval, religious beliefs, health effect beliefs (i.e., fear of side effects, and misconceptions about contraceptive side effects), and infrequent sex may contribute to low contraceptive use [7]. Low contraceptive use may also reflect the socio-cultural beliefs and practices inherent in the study communities. For example, discussing contraception remains a taboo in some of the refugees' countries of origin, where patriarchal norms prevail, and women are subordinate to men who are the primary decision-makers, including on matters like the number of children [25, 26]. Collectively, these factors may expose women in these settings to a high risk of unintended pregnancy and associated negative health and social consequences.

Our study also shows that only a third of nonusers (32%) had the intention to use a method in the future. Additionally, the profile of intentions does not reflect the current method mix among current users. While current use is dominated by traditional methods, condoms, and injectables, 81% of current non-users who intend to use contraception in the future specified injectables, implants, or pills as their preferred methods. Notably, the rank order of preference among these three methods mirrors their relative popularity in Uganda[23]. Our findings suggest that women in refugee settlements may not receive their preferred methods, which is against their reproductive rights.

Low intention to use contraceptives was coupled with unfavorable beliefs. Most women (92-95%) believed that prolonged use of injectables, implants, or pills without a break was unsafe, and many acknowledged that using these three methods would cause unpleasant side effects. Additionally, more than half of the women believed that using implants or injectables would interfere with menstruation, and a significant proportion (between 17-26%) believed that using any of the three methods could cause infertility. Thus, many women in refugee settings are concerned about the health effects of contraception, which may affect current and future use. Our findings are consistent with results from studies based in urban and rural Kenya, highlighting the anxiety women have about the impact of hormonal contraceptives on their health and the anticipation of side effects [15, 16].

Perceived convenience (ease of obtaining or using the methods) was statistically significantly associated with the intention to use injectables, pills, or implants in the future. This finding highlights the need to improve contraceptive availability and accessibility in these settings. More efforts should focus on increasing the number of service delivery points offering family planning methods, expanding the number of trained providers, improving the range of available methods, and addressing contraceptive security[27]. Accessibility can be enhanced by focusing heavily on community outreach strategies and making contraception available along with other services such as food distribution[28]

Perceived safety for longer-term use was positively associated with future method choice, even after controlling for other attributes. While there is no clear explanation for this association, we note that over 90% of women in the study considered the use of injectables, pills, and implants unsafe for extended periods without taking breaks, possibly reflecting their anxiety about health effects[29]. Social networks and past experiences with these methods also played a significant role in shaping future choices. Women who had used these methods in the past or whose social networks had tried injectables, pills, or implants and were satisfied were more likely to express intentions to use these methods in the future. Our finding aligns with other studies showing that a woman's social network influences her decision to choose

and adopt a particular method[30, 31]. Personal experience, particularly satisfaction among past users, has a positive influence on future use of the same method[16, 32].

Limitations of the study

The study has some limitations. The data analyzed is based on women's self-reports, which may introduce reporting biases, such as cognitive and social desirability. The sensitive nature of questions about contraceptive use may lead to underreporting or overreporting of beliefs. Although it would have been ideal to examine the entire spectrum of contraceptive methods, the analysis was limited to three methods—pills, injectables, and implants. We did not analyse other methods due to an insufficient number of cases for meaningful statistical analysis. Despite these limitations, our study is innovative in its detailed measurement of method-specific perceptions that may influence future decisions to adopt or continue using specific methods among women in humanitarian settings. Additionally, we plan to investigate further how women's opinions or stated intentions about contraceptive choice affect actual method use using a contraceptive calendar in a future follow-up interview.

Conclusion

Intention of contraception among non-users in refugee settlements is low, with widespread negative perceptions of available methods. Future method choice is shaped by perceived convenience, long-term safety of the method, social network satisfaction, and past experiences. These findings highlight the need to improve counseling to counter unfounded negative beliefs and to expand access to a range of contraceptive methods

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