

BMJ Open Leveraging telemedicine to explore contraceptive use and attitudes among refugee women: an observational cross-sectional analysis

Iffat Zafar Aga ^{1,2} Sara Saeed Khurram,^{1,3} Muhammad Muzzamil ^{1,4}
Mahek Karim ^{1,5} Shahkamal Hashmi⁶

To cite: Aga IZ, Khurram SS, Muzzamil M, *et al.* Leveraging telemedicine to explore contraceptive use and attitudes among refugee women: an observational cross-sectional analysis. *BMJ Open* 2025;**15**:e092240. doi:10.1136/bmjopen-2024-092240

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<https://doi.org/10.1136/bmjopen-2024-092240>).

Received 09 August 2024
Accepted 28 February 2025



© Author(s) (or their employer(s)) 2025. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ Group.

For numbered affiliations see end of article.

Correspondence to
Dr Iffat Zafar Aga;
iffatzaga@gmail.com

ABSTRACT

Objective The study examined how refugees in Pakistan who accessed e-health clinics to get sexual and reproductive health (SRH) care perceived and used contraception. The prevalence, attitudes and variables affecting the adoption or non-adoption of contraceptives were the intended outcomes. The study additionally investigated how frequently refugee women used these clinics and how satisfied they were with the way telemedicine met their SRH needs.

Design An observational cross-sectional methodology was used in this study to observe SRH-related telemedicine consultations. The study was conducted from 17 April 2024 to 31 May 2024.

Setting The data collection was done using a survey instrument and it was preserved in the organisation's electronic health record. The investigation was conducted at nine Sehat Kahani e-health clinics, four in Balochistan and five in Khyber Pakhtunkhwa provinces.

Participants The study enrolled 576 women who were refugees; they were recruited after they attended Sehat Kahani e-health clinics for SRH services and gave their consent to participate.

Results The study reported that refugee women visiting e-health clinics used contraception at a significant rate (68.1%). The majority (71.4%) of women rely on partners for family planning decisions. The primary reasons for using contraception were child spacing (33.2%) and preventing unintended pregnancy (31.1%). Housewives and those with an income of 20 000–40 000 Pakistan rupees (PKR) were more likely to use contraception. Women with limited access to SRH services, as well as those whose spouses make healthcare decisions, were less likely to use them.

Conclusion Women seeking refugee status who visited Sehat Kahani e-clinics depend substantially on contraception, with a preference for shorter-term options. Consumption of contraceptives was enhanced by collaborative decision-making and availability of SRH services, while it was hampered by a lack of education and healthcare control by husbands. Improving SRH outcomes for remote refugees confronting cultural hurdles is possible through telemedicine by overcoming these gaps.

INTRODUCTION

Sexual and reproductive health (SRH) and the ability to obtain SRH treatments are

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Data from multiple provinces enhance the study's generalisability and usefulness.
- ⇒ Telemedicine platforms can potentially reduce provider biases by standardising patient interactions.
- ⇒ Limited examination of household dynamics and their impact on contraceptive choices.
- ⇒ Potential for bias exists due to the reliance on self-reported data.
- ⇒ The findings may pertain exclusively to Sehat Kahani and may not comprehensively reflect experiences with alternative telemedicine platforms.

fundamental entitlements of every individual, according to target 3.7 of the sustainable development goals.¹ Pakistan has demonstrated unwavering commitment for over four decades in safeguarding and providing refuge to displaced individuals. Pakistan shelters many people of diverse backgrounds who have been uprooted from their homes and are searching for peace. This diverse group includes refugees and asylum seekers from countries such as Myanmar, Yemen, Somalia and Syria, although constituting a smaller percentage than Afghans carrying PoR (Proof of Registration) documents.²

In developing nations that are home to 1.6 billion women of reproductive age, there is a notable disparity between the intention and implementation of measures to avoid conception. Out of a total of 885 million women who desire to prevent conception, only 671 million make use of contemporary methods of contraception, resulting in 214 million women who have an unsatisfied requirement for contraception. This unmet demand is evident in two distinct ways: 155 million women do not use any contraceptive method, while 59 million women depend on conventional methods that are comparatively less efficient. Significantly, the

regions of sub-Saharan Africa and Southern Asia experience the greatest burden of this inequality, with 39% of women in these areas attempting to avoid pregnancy and a remarkable 57% of them without access to modern contraception.³

A population of over 7 million individuals from Afghanistan, with diverse legal statuses, currently reside in the countries of the Islamic Republic of Iran and Pakistan with the primary objective of seeking refuge and protection. Since August 2021, a significant influx of around 1.3 million Afghan individuals has been observed in the surrounding nations. Children comprise a substantial chunk of 49% of Pakistan's Afghan population, totalling 3.3 million individuals. Among this demographic, there are approximately 1.6 million undocumented Afghans and individuals with other legal statuses. The persistent existence of refugees, predominantly in metropolitan regions, has strained Pakistan's existing resources, particularly in delivering health, nutrition, water, sanitation and hygiene services and education.⁴

Refugees and displaced individuals, particularly women and girls, face heightened vulnerabilities. Women often experience diminished social status and limited access to education, hindering their autonomy and economic opportunities. These factors, coupled with the inherent challenges of displacement, increase their vulnerability within their communities.⁵ Therefore, refugees or displaced women face the potential for unfavourable health consequences, including unwanted pregnancies resulting from limited availability of contraception and inadequate access to abortion services. Additionally, they are at heightened risk of contracting sexually transmitted illnesses and experiencing sexual and gender-based violence.⁶⁻⁸

A snapshot of the digital health sector in Pakistan: early growth and regulatory considerations

At present, Pakistan's digital health regulatory framework is fragmented; the Sindh Telemedicine Act is the only provincial law that requires telemedicine practitioners to be registered and places an emphasis on the privacy of patient data. Nevertheless, the absence of a thorough national framework for regulating digital health poses obstacles to the long-term expansion and improvement of this industry. In order to facilitate this industry, the Ministry of National Health Services, Regulations and Coordination of the Government of Pakistan in conjunction with provincial health departments has prepared an National Digital Health Framework Pakistan (NDH) Framework 2022–2030 ('NDH Framework'). Privately held startups make up the bulk of Pakistan's digital health sector, which is still in its early phases. Sehat Kahani, Ailaaj, Marham, Healthwire, Dawaai and a handful of other notable figures are making their mark.⁹

A pilot programme started by Ipas Pakistan in partnership with Sehat Kahani (an Non-governmental organization [NGO]) and Lady Health Workers (LHWs). Through the use of mobile devices, LHWs acted as

intermediaries, linking women in need of Sexual and Reproductive Health and Rights (SRHR) consultations (including those regarding abortion, gynaecological issues and contraception) with telemedicine providers. A total of 98 LHWs and 22 telemedicine physicians received training. From June 2020 to March 2021, 176 women received help from this model. According to the data, a telehealth-accompaniment method has the ability to overcome the limits in digital access for SRHR services in Pakistan, leading to high client satisfaction and favourable clinical outcomes.¹⁰

To address this disparity in access to healthcare availability, Sehat Kahani emerges as a beacon of hope. This innovative e-health platform empowers women to achieve sustainable health outcomes, specifically focusing on remote areas where access to traditional healthcare services remains limited. Through their mobile application and strategically located e-health nurse-assisted centres across Pakistan, by leveraging technology and addressing the specific needs of women in remote areas, Sehat Kahani holds immense potential to bridge the digital divide and contribute to a healthier future for all Pakistani women.¹¹

The research aimed to address the two-pronged issue of contraception among refugees who obtained assistance for their SRH issues through e-health facilities based in the provinces of Balochistan and Khyber Pakhtunkhwa (KPK). The primary objective of the study was to determine the prevalence of contraceptive use and assess general perceptions and attitudes towards contraception within this population. The secondary objective of the study is to determine the factors that influence both the utilisation and avoidance of contraception. The research further explored how refugee women are making use of SRH services offered by Sehat Kahani e-health clinics in Pakistan by identifying how many refugees use these clinics and their satisfaction with the problem-solving abilities of telemedicine in SRH issues.

METHODOLOGY

The study used an observational cross-sectional design to assess the current perspective of SRH services, the influence of contraceptive utilisation and the efficiency of the Sehat Kahani platform in providing SRH services to refugee women. The necessity to identify important e-health clinics accommodating the enlarged needs of the refugee community was brought to light by an increase in the utilisation statistics of SRH services among refugees inside the Sehat Kahani e-health database. Multiple e-health clinics in the provinces of Balochistan and KPK were facilitating refugees, and they were selected due to their high service volumes for refugees. Four Balochistan clinics (Arif Clinic, City Clinic, Umar Clinic and Faraz Clinic) and five KPK clinics (Alkhidmat Clinic, Alshifa Health Clinic, Grana Clinic & Maternity Home, R. Akhtar Maternity Home and Riffat Amjad Clinic) were chosen to undergo further evaluation

because of their substantial service volumes for refugees. Subsequently, individuals for the study were enlisted from the mentioned clinics.

Sehat Kahani is a comprehensive digital healthcare platform that facilitates audio/video consultations between patients and highly skilled doctors/specialists. Our services enable patients residing in marginalised groups and remote places to get medical care through our e-health solution, which includes 63 e-health clinics, retail applications, corporate applications and e-pharmacy services.

Data were collected from nine e-health nurse-assisted centres. At these centres, patients were connected with expert healthcare providers who were all based in Pakistan (General Physicians/Specialists) based on their individual health needs. A nurse facilitated the initial connection and subsequently discreetly withdrew to ensure patient privacy during the consultation. This facilitated access to healthcare services and enabled patients to address their health concerns directly with qualified medical professionals.

Data collection was started on 17 April and ended on 31 May 2024 at these designated clinics. The prevalence for the sample size calculation was obtained from the United Nations High Commissioner for Refugees (UNHCR) report that was published on 31 December 2023. The report provided a detailed analysis indicating that 20.4% of females aged 18–59, who have migrated to Pakistan, are now residents in the country.¹² Considering the high occurrence rate, we determined the sample size for the sample to be 509, with a 3.5 margin of error at a 95% CI. This calculation was done using the Open Epi sample size calculator V.3.01.¹³ Considering a refusal rate of 15%, the total sample size was determined to be 585 patients. The study included women of reproductive age, specifically those between ages 18 and 49 years, with access to Sehat Kahani e-health clinics for consulting on SRH issues through nurse-assisted telemedicine clinics, which were of major significance. Patients with serious illnesses that cannot be properly managed through teleconsultation, requiring urgent medical attention, and those who do not wish to disclose their identity as a refugee remained excluded.

Patient consent

Patients who use the Sehat Kahani e-health platform provide informed consent, which explicitly acknowledges the potential use of anonymised data for commercial purposes and publications that promote the telemedicine approach to healthcare access. This transparent method safeguards patient privacy while allowing the study to contribute to the improvement of telemedicine in healthcare delivery.

Patient and public involvement

None.

Data collection tool

The instrument for data collection was obtained from two research papers.^{14 15} The integration of these questionnaires enhanced the comprehensiveness of the instrument used in the current research in delivering information on contraception usage and telemedicine service provision by the refugee population residing in Pakistan. Adding further inquiries regarding the demographic characteristics and the efficiency of the Sehat Kahani platform on patients who avail its services. In general, the instrument offered a comprehensive and uniform method for gathering patient information during SRH consultation.

Statistical analysis

Data analysis was conducted using the Statistical Package for Social Sciences V.24.0. Subsequently, the subjects were classified into suitable categories and subjected to prior assumption verification before conducting data analysis. Frequencies and percentages were used to produce descriptive statistics. A binary logistic regression model was used to analyse both the bivariate and multivariable in order to determine the factors that were independently linked to the use of contraceptives. Only the components that had a p value of less than 0.25 at the bivariate level were included in the multivariate model. Age group was included in the multivariable models as a priori factors. The Hosmer-Lemeshow goodness-of-fit test was conducted for the multivariable logistic regression model.

RESULTS

Among the female patients who attended Sehat Kahani e-health clinics, 576 participants made up the final sample, the majority (63.9%) were new patients. Additionally, 11.1% of the patients had three follow-up visits, 78.3% of the participants are from rural backgrounds, 97.6% are married and 50.5% belong to the >35 age group. Additionally, the majority of females (81.9%) have not received any formal education. Based on the data, it can be seen that nearly half (47.4%) of the participants were housewives and the remaining participants (35.1%) were self-employed. Furthermore, 79% of the partners of the participants had no formal education, and 83.2% were self-employed. The participants predominantly spoke Pashto (51%) and Afghani (38%) as their language of choice for communication. Approximately 82.1% of the participants resided with their families, and 94.3% of these families consisted of more than four persons. The majority of families, accounting for 50.5% of the total, had a gross monthly income ranging from 20 000 to 40 000 PKR, while 37.2% of the families were earning less than 20 000 PKR as monthly gross income, as discussed in table 1.

When asked about their original nationality, 90.8% of respondents mentioned being Afghan. Regarding their place of birth, 75.2% stated that they were born in Afghanistan. Among the reasons given for leaving their

Table 1 Socio-demographic characteristics of participants visiting Sehat Kahani e-health centres for contraceptive services

Variables	Frequency N	Percentage %
Demographic characteristics		
Type of consultation		
Follow-up consultation	208	36.1
New consultation	368	63.9
If you are a follow-up participant, how many times have you used the e-health services at Sehat Kahani clinics		
One time	50	8.7
Two times	51	8.9
Three times	64	11.1
More than three times	43	7.5
Age categories of participants		
18–25 age group	57	9.9
26–35 age group	228	39.6
>35 age group	291	50.5
Age categories of partner		
18–25 age group	59	10.2
26–35 age group	228	39.6
>35 age group	289	50.2
Residence of the participant		
Urban	125	21.7
Rural	451	78.3
Marital Status		
Single	7	1.2
Married	562	97.6
Divorced	3	0.5
Widowed	4	0.7
Educational status of the participant		
No education	472	81.9
Primary education (1–5)	86	14.9
Secondary education (7–12)	17	3.0
Tertiary education (bachelors and above)	1	0.2
Educational status of the partner		
No education	455	79.0
Primary education (1–5)	87	15.1
Secondary education (7–12)	32	5.6
Tertiary education (bachelors and above)	2	0.3
Gross monthly income categories		
Less than 20 000 PKR	214	37.2
20 000–40 000 PKR	291	50.5
More than 40 000 PKR	71	12.3
Language spoken by the participant		

Continued

Table 1 Continued

Variables	Frequency N	Percentage %
Urdu	17	3.0
English	2	0.3
Sindhi	4	0.7
Punjabi	4	0.7
Balochi	29	5.0
Pashto	294	51.0
Afghani	219	38.0
Persian	6	1.0
Barvi	1	0.2
Occupation of the participant		
Small business/self-employed	202	35.1
Unemployed	75	13.0
Freelancing	10	1.7
Housewife	273	47.4
Others	16	2.8
Occupation of the partner		
Small business/self-employed	479	83.2
Unemployed	78	13.5
Freelancing	3	0.5
Others	16	2.8
Current living situation		
Living alone	103	17.9
Living with family	473	82.1
Number of family members		
Less than four members	33	5.7
More than four members	543	94.3
PKR, Pakistan rupees.		

hometown, 27.8% mentioned security concerns, while 26.9% highlighted lack of healthcare. Following the data, in response to an inquiry on where they initially resided after leaving their native country, 52.6% of respondents indicated a village, while 28.1% said refugee camps. When queried about the duration of their residence in Pakistan, 63% of respondents indicated that they were unsure of how long they had been living here, as discussed in [table 2](#).

In addition, when asked about the practice of contraception, 64.4% of respondents were aware of it, 59.9% had used it in the past and 68.1% said that they are presently using some form of it. Regarding the frequency of contraceptive method usage, roughly 59.7% of patients reported using a contraceptive method for less than 1 year. Nearly one-third of patients (71.4%) reported that their partner exclusively holds the authority to make decisions regarding family planning (FP). Subsequently, they were asked about the frequency of their contraceptive

Table 2 Migration characteristics of participants visiting Sehat Kahani e-health centres for contraceptive services

Variables	Frequency N	Percentage %
Migration characteristics		
Where were you born		
Pakistan	123	21.4
Afghanistan	433	75.2
Iran	18	3.1
Iraq	2	0.3
What was your original nationality before you got refugee status		
Afghani	523	90.8
Irani	17	3.0
Iraqi	2	0.3
Not willing to tell	34	5.9
What was the reason for leaving your own country		
Security concerns	160	27.8
Lack of daily necessities	133	23.1
Lack of healthcare	155	26.9
Economic difficulties	128	22.2
Where did you live before you were relocated from your country for the first time		
City	54	9.4
Village	303	52.6
Capital city	29	5.0
Refugee camp	162	28.1
Not willing to tell	28	4.9
How long have you been living in Pakistan		
Since I was born	133	23.1
Do not know	363	63.0
Not willing to tell	80	13.9

use; 67.9% indicated sometimes usage. The main reason for the majority of couples using contraceptive techniques was to achieve child spacing, accounting for 33.2% of respondents. Another significant factor was the desire to prevent unwanted pregnancies, which accounted for 31.1% of respondents. Around 23.6% of the participants indicated that they stopped using contraceptives due to breastfeeding, whereas 21.9% reported experiencing difficulty in conceiving. When asked about the harmful consequences of using contraceptive techniques, 73.4% of the patients reported having not experienced any negative effects related to contraception. One-third of the patients (30.4%) admitted having experienced unintended pregnancies.

After patients finished answering questions in earlier sections, patients were asked to provide their age at the time of marriage, as well as their partner's age. The age category of 16–30 was the most common among both genders, females with 89.9% and males with 82.5%.

Moreover, when patients were asked about the number of living children, they reported a number of 4–6 children, accounting for around 47%. Subsequently, the patients were inquired about the frequency of pregnancies they have experienced in Pakistan, 39.2% of individuals reported having had one to three pregnancies. While over half (58.7%) received some antenatal care during their last pregnancy, only 42.2% had just one visit, indicating a potential gap in comprehensive care. Moving further, it was asked what SRH services are required by the patient during their present visit to the e-healthcare facility; 29.5% mentioned FP services, and the other half mentioned education and counselling (25.7%). The data, however, provide some encouraging insights into the operations of organisations like the Sehat Kahani e-health clinics. Notably, users reported high satisfaction with Sehat Kahani, a provider who actively listened to their concerns and helped them with their issues; 65.8% were very satisfied and 32.5% were satisfied. Overall, a substantial majority expressed high satisfaction with telemedicine in addressing SRH needs (62%) and returning for future services (96.9%) (online supplemental table 1).

The main factors associated with contraceptive use in univariate analysis were women's occupation, household income, involvement in FP decision-making, knowledge of contraceptive methods, recent visit to a healthcare facility for SRH services and decision-making regarding one's own healthcare. The multivariate logistic regression analysis provided multiple findings of contraceptive utilisation among female refugee patients. The utilisation of contraceptives was less common among women between the ages of 26 and 35 (OR=0.671, 95% CI (0.251, 1.791), $p=0.425$). On the other hand, housewives (OR=7.575, 95% CI (3.865, 14.848), $p=0.001$) and individuals from households with a monthly income of 20 000–40 000 PKR (OR=0.192, 95% CI (0.104, 0.354), $p=0.001$) showed a significantly greater probability of using contraceptives. However, women who made collaborative decisions with their spouses about FP were found to have a lower likelihood of using contraception compared with those who made autonomous decisions (OR=4.394, 95% CI (1.055, 18.303), $p=0.042$). Furthermore, the odds of contraceptive use were significantly higher for women who desired but lacked access to SRH services (OR=6.071, 95% CI (2.354, 15.656), $p=0.001$) compared with those who accessed such facilities. Adding further, the utilisation of contraceptives was lower among women whose husbands make decisions regarding their personal healthcare (OR=0.147, 95% CI (0.063, 0.341), $p=0.001$) as indicated in table 3.

The model was determined to be statistically fit based on the Hosmer-Lemeshow test, with a p value of 0.46. The Nagelkerke R^2 value of this model indicates that 61.9% of the variance in the dependent variable can be explained by the independent variables.

Figure 1 illustrates a bar chart depicting the level of awareness among refugee patients regarding different

Table 3 Factors associated with contraceptive utilisation among women visiting Sehat Kahani e-health centres

Variables	Contraception utilisation		Crude		Adjusted	
	Yes N (%)	No N (%)	OR (95% CI)	P value	OR (95%CI)	P value
Demographic factors						
Age in years						
18–25	41 (71.9)	16 (28.1)	Ref		Ref	
26–35	175 (76.8)	53 (23.2)	0.776 (0.403, 1.493)	0.448	0.671 (0.251, 1.791)	0.425
>35	176 (60.5)	115 (39.5)	1.674 (0.897, 3.124)	0.105	1.549 (0.607, 3.952)	0.36
Marital status						
Married	382 (68)	180 (32)	Ref		Ref	
Not in union/single	10 (71.4)	4 (28.6)	0.849 (0.263, 2.743)	0.784	–	–
Patient occupation						
Working women	188 (82.5)	40 (17.5)	Ref		Ref	
Housewife	204 (58.6)	144 (41.4)	3.318 (2.218, 4.962)	0.001*	7.575 (3.865, 14.848)	0.001*
Patient education						
No education	320 (67.8)	152 (32.2)	Ref		Ref	
Primary and above	72 (69.2)	32 (30.8)	0.936 (0.591, 1.481)	0.776	–	–
Partner education						
No education	306 (67.3)	149 (32.7)	Ref		Ref	
Primary and above	86 (71.1)	35 (28.9)	0.836 (0.539, 1.297)	0.423	–	–
Household income PKR						
< 20 000	90 (42.1)	124 (57.9)	Ref		Ref	
20 000–40 000	261 (89.7)	30 (10.3)	0.083 (0.052, 0.133)	0.001*	0.192 (0.104, 0.354)	0.001*
> 40 000	41 (57.7)	30 (42.3)	0.531 (0.308, 0.915)	0.022*	1.297 (0.615, 2.737)	0.495
Family type						
Nuclear	69 (67)	34 (33)	Ref		Ref	
Joint	323 (68.3)	150 (31.7)	0.942 (0.599, 1.484)	0.798	–	–
Contraceptive factors						
FP decision-making						
Jointly	116 (84.1)	22 (15.9)	Ref		Ref	
Wife only	15 (55.6)	12 (44.4)	4.218 (1.740, 10.225)	0.001*	4.394 (1.055, 18.303)	0.042*
Husband/partner only	261 (63.5)	150 (36.5)	3.030 (1.842, 4.986)	0.001*	2.563 (1.309, 5.018)	0.006*
Knowledge on contraceptive methods						
No	85 (41.5)	120 (58.5)	Ref		Ref	
Yes	307 (82.7)	64 (17.3)	0.148 (0.100, 0.217)	0.001*	0.117 (0.060, 0.227)	0.001*
Visit to a healthcare facility in the last year for SRH services						
No	164 (72.6)	62 (27.4)	Ref		Ref	
Yes	198 (76.4)	61 (23.6)	0.815 (0.541, 1.227)	0.327	0.963 (0.463, 2.004)	0.92
Wanted to but service/facility not accessible	11 (16.7)	55 (83.3)	13.226 (6.501, 26.908)	0.001*	6.071 (2.354, 15.656)	0.001*
Not willing to tell	19 (76)	6 (24)	0.835 (0.319, 2.189)	0.714	1.367 (0.390, 4.787)	0.625
Decision regarding receiving own healthcare						
Myself	14 (28)	36 (72)	Ref		Ref	
Husband/partner	351 (80.7)	84 (19.3)	0.093 (0.048, 0.180)	0.001*	0.147 (0.063, 0.341)	0.001*

Continued

Table 3 Continued

Variables	Contraception utilisation		Crude OR (95% CI)	P value	Adjusted OR (95%CI)	P value
	Yes N (%)	No N (%)				
Other family members	27 (29.7)	64 (70.3)	0.922 (0.429, 1.979)	0.835	0.312 (0.108, 0.900)	0.031*

Hosmer and Lemeshow goodness of fit test $p=0.46$, Nagelkerke $R^2=0.619$.

All the bold values are statistically significant p-values.

FP, family planning; PKR, Pakistan rupees; SRH, sexual and reproductive health.

contraceptive techniques. Figure 2 illustrates the current methods of contraception being used by refugee patients visiting the Sehat Kahani e-health facility.

DISCUSSION

In this study, the prevalence of the ever-use of one modern contraceptive method was estimated to be 59.9%. The primary factors that influenced the use of contraceptives were the patient's occupation, household income, involvement in FP decision-making, knowledge about contraceptives, visit to healthcare facilities in the last year for SRH services and personal decisions regarding healthcare. Overall, 64.4% of surveyed refugee women indicated their knowledge of at least one contemporary FP method. The results of the present study are lower in comparison to a multicountry assessment that aimed to document the understanding, beliefs and behaviours regarding FP among refugees. This evaluation reported a higher percentage of 74% of women who possessed knowledge of at least one modern technique of FP.¹⁶

The present level of contraceptive usage in the research area is 68.1%, which is greater than the usage rate of 47.7% found in a study conducted among the refugee population of Northern Ethiopia.⁶ Furthermore, the utilisation rate of modern contraceptives in this study is significantly greater than that reported in UNHCR studies conducted in five refugee camps: Djibouti (5.1%),¹⁷ Kenya (6.8%),¹⁸

Jordan (21.4%),¹⁹ Malaysia (34.2%)²⁰ and Uganda (14.6%).²¹

The findings of our survey reveal that short-term contraceptive methods were the most commonly used, with male condoms being among the most common at 46.0%, followed by oral contraceptives at 30.7% and injectables at 16.5%. The method of implants had the lowest selection rate, accounting for only 3.8%. Remarkably, the findings of this study differed from those of a study conducted in Northern Ethiopia⁶ in only one aspect. The use of injectable contraceptives was much higher (63.1%), whereas the use of oral contraceptives (25.5%) and male condoms (7.6%) were lower and higher, respectively, in the present investigation. Significantly, the utilisation of implants remained constant in both investigations, with a rate of 3.8%.⁶

It was shown in the prior studies that the use of modern contraception was greatly affected by women's occupational standing in the survey conducted in Northern Ethiopia. Housewives were 79% less likely to use current methods of contraception compared with those who worked as a daily labour.⁶ Furthermore, research in six distinct Nepal²² ethnic groups corroborated this conclusion by showing that working women were far more likely to use contraception than their unemployed counterparts. Our analysis contradicts the findings of these two studies because it found that housewives were much more

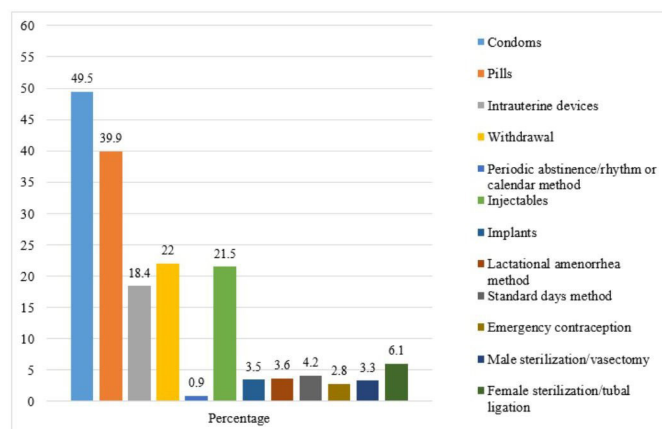


Figure 1 Knowledge of patients about contraceptive methods.

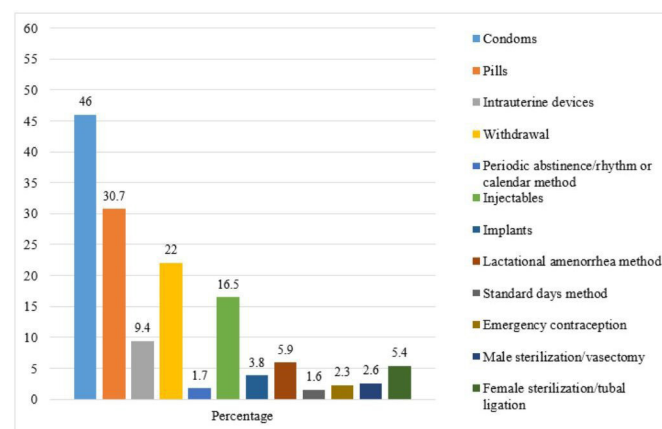


Figure 2 Methods of contraception currently used by patients.

likely to use contraceptives (OR=7.575, 95% CI (3.865, 14.848), $p=0.001$).

This study offers significant insights into the use of telemedicine by refugees in Pakistan to meet their contraceptive health needs. Furthermore, it explores specific types of services they took while visiting the e-health clinics. The current research indicates greater satisfaction with e-health clinic services among refugee patients in Pakistan, contrasting with earlier studies on contraception utilisation in other refugee groups that revealed variable degrees of contemporary contraceptive uptake. This favourable result can be ascribed to various reasons, including the distinctive environment of this study, particularly the emphasis on reproductive health requirements and the employment of telemedicine as the principal method of care provision. This study offers a detailed investigation of contraceptive utilisation among refugees in Pakistan based in two provinces Balochistan and KPK. These findings establish a solid foundation for more extensive, long-term research to improve our understanding of contraceptive use among refugees and the effects of telemedicine on their health, not only in Pakistan but also in other low- and middle-income countries.

Conclusion

The study highlights the FP practices of refugee women who are using Sehat Kahani e-health clinics in Pakistan. Significantly, a considerable number of these women actively adopted contraception, displaying a preference for short-term techniques. Enabling factors encompassed collaborative decision-making with their partners and the availability of SRH services. On the other hand, the lack of educational possibilities and husbands exerting control over healthcare choices were seen as obstacles. These findings highlight the capacity of telemedicine to address these disparities by increasing the availability of FP materials and education, especially for refugee populations that are physically isolated and face cultural and social restrictions. Telemedicine has the potential to greatly enhance SRH outcomes for this vulnerable community by addressing these gaps.

Author affiliations

¹Public Health and Digital Health, Sehat Kahani C/O Community Innovation Hub, Karachi, Sindh, Pakistan

²Global Health, The University of Edinburgh Centre for Global Health Research, Edinburgh, UK

³Health Policy and Management, The Aga Khan University, Karachi, Sindh, Pakistan

⁴Public Health, Health Services Academy, Islamabad, Punjab, Pakistan

⁵Department of Community Health Sciences, The Aga Khan University, Karachi, Sindh, Pakistan

⁶Public Health, Ziauddin Medical University, Karachi, Sindh, Pakistan

Acknowledgements The authors would like to acknowledge Rayan Korri and Khunsha Fatima for their kind permission to utilize their questionnaire in this study. I would like to express my sincere appreciation to Fawad Akbari, Zainah Alsamman, Nachiket Deval and Elizabeth Elsa from the GCC team for supporting our e-health centers initiative. I am grateful to Muhammad Sumair Khan, Lead Clinical Operations and Imran Mughal, Senior Manager Clinical Operations at Sehat Kahani, for providing essential EHR data from the cloud, which significantly enriched my research.

Contributors IZA developed the study's framework and methodology. Data were gathered and organised by MM, SH and MK. MM did the analysis and interpretation. The manuscript was initially drafted by IZA, MK and finished by MM. The manuscript was edited for clarity and accuracy by SSK. All authors have critically reviewed and approved the final draft. IZA is the guarantor of this research study.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design or conduct or reporting or dissemination plans of this research.

Patient consent for publication Consent obtained directly from patient(s).

Ethics approval The Ethics committee/Institutional Board (IRB) that gave the approval for the study is of 'Sehat Kahani C/O Community Innovation Hub'. IRB Reference No: IRB-0023/CIH/2024. Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement No data are available.

Supplemental material This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Iffat Zafar Aga <http://orcid.org/0009-0002-3621-6922>

Muhammad Muzzamil <http://orcid.org/0000-0001-9871-5837>

Mahek Karim <http://orcid.org/0009-0003-8300-9210>

REFERENCES

- Desrosiers A, Betancourt T, Kergoat Y, *et al*. A systematic review of sexual and reproductive health interventions for young people in humanitarian and lower-and-middle-income country settings. *BMC Public Health* 2020;20:666.
- UNHCR. Pakistan Country Factsheet (June 2023). UNHCR Operational Data Portal (ODP), 2023. Available: <https://data.unhcr.org/en/documents/details/101350>
- Guttacher Institute. Adding It Up: Investing in Contraception and Maternal and Newborn Health, 2017. 2022. Available: <https://www.guttacher.org/fact-sheet/adding-it-up-contraception-mnh-2017>
- ReliefWeb. Afghanistan Refugees Appeal 2023 - Humanitarian Action for Children - Iran (Islamic Republic of). 2023. Available: <https://reliefweb.int/report/iran-islamic-republic/afghanistan-refugees-appeal-2023-humanitarian-action-children>
- Davidson N, Hammarberg K, Romero L, *et al*. Access to preventive sexual and reproductive health care for women from refugee-like backgrounds: a systematic review. *BMC Public Health* 2022;22:403.
- Seyife A, Fisseha G, Yebyo H, *et al*. Utilization of modern contraceptives and predictors among women in Shimebela refugee camp, Northern Ethiopia. *PLoS One* 2019;14:e0212262.
- Bakesima R, Cleeve A, Larsson E, *et al*. Modern contraceptive use among female refugee adolescents in northern Uganda: prevalence and associated factors. *Reprod Health* 2020;17:67.
- Jennings L, George AS, Jacobs T, *et al*. A forgotten group during humanitarian crises: a systematic review of sexual and reproductive health interventions for young people including adolescents in humanitarian settings. *Confl Health* 2019;13:57.
- Majeed S. Digital Health Laws and Regulations Pakistan 2024. International Comparative Legal Guides International Business Reports. 2024. Available: <https://iclg.com/practice-areas/digital-health-laws-and-regulations/pakistan>

- 10 Shaikh I, Küng SA, Aziz H, *et al.* Telehealth for Addressing Sexual and Reproductive Health and Rights Needs During the COVID-19 Pandemic and Beyond: A Hybrid Telemedicine-Community Accompaniment Model for Abortion and Contraception Services in Pakistan. *Front Glob Womens Health* 2021;2:705262.
- 11 Muzzamil M, Karim M, Khurram SS, *et al.* Patient perspectives and utilization of telemedicine for chronic conditions in Pakistan barriers and facilitators towards its access. *Discov Public Health* 2025;22:30.
- 12 UNHCR. Pakistan Overview of Refugee and Asylum-Seekers Population as of December 31, 2023. UNHCR Operational Data Portal (ODP), Available: <https://data.unhcr.org/en/documents/details/106702>
- 13 Mir K, Roger A. OpenEpi - Toolkit Shell for Developing New Applications, Available: <https://www.openepi.com/SampleSize/SSPropor.htm>
- 14 Korri R, Froeschl G, Ivanova O. A Cross-Sectional Quantitative Study on Sexual and Reproductive Health Knowledge and Access to Services of Arab and Kurdish Syrian Refugee Young Women Living in an Urban Setting in Lebanon. *Int J Environ Res Public Health* 2021;18:9586.
- 15 Siddiqui M, Fatima K, Ali SN, *et al.* Prevalence and Predictors of Contraception Usage in Karachi, Pakistan. *Cureus* 2020;12:e11265.
- 16 Tanabe M, Myers A, Bhandari P, *et al.* Family planning in refugee settings: findings and actions from a multi-country study. *Confl Health* 2017;11:1–2.
- 17 UNHCR. Baseline Study: Documenting knowledge, attitudes and behaviours of Somali refugees and the status of family planning services in UNHCR's Ali Addeh Site, Djibouti, Available: <https://www.unhcr.org/media/baseline-study-documenting-knowledge-attitudes-and-behaviours-somali-refugees-and-status>
- 18 UNHCR. Baseline Study: Documenting knowledge, attitudes and practices of Somali refugees and the status of family planning services in UNHCR's operation in Nairobi, Kenya, Available: <https://www.unhcr.org/media/baseline-study-documenting-knowledge-attitudes-and-practices-somali-refugees-and-status>
- 19 UNHCR. Baseline Study: Documenting knowledge, attitudes and practices of Iraqi refugees and the status of family planning services in UNHCR's operations in Amman, Jordan, Available: <https://www.unhcr.org/media/baseline-study-documenting-knowledge-attitudes-and-practices-iraqi-refugees-and-status-family>
- 20 UNHCR. Baseline Study: Documenting knowledge, attitudes and behaviours of Burmese refugees and the status of family planning services in UNHCR's operation in Kuala Lumpur, Malaysia, Available: <https://www.unhcr.org/media/baseline-study-documenting-knowledge-attitudes-and-behaviours-burmese-refugees-and-status>
- 21 UNHCR. Baseline Study: Documenting knowledge, attitudes and practices of refugees and the status of family planning services in UNHCR's operations in Nakivale refugee settlement, Uganda, Available: <https://www.unhcr.org/media/baseline-study-documenting-knowledge-attitudes-and-practices-refugees-and-status-family>
- 22 Sharma SK, Pratap N, Ghimire DR. Ethnic differentials of the impact of Family Planning Program on contraceptive use in Nepal. *DemRes* 2011;25:837–68.