



Interactive Mobile Phone Application for Better Family Planning Services in Jordan: A Quasi-experimental Study

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ABSTRACT

Background: Technological solutions can enhance health-related behaviors, knowledge, and attitudes. The field of family planning can effectively utilize this technology. **Purpose:** To evaluate the impact of an interactive mobile phone application on family planning services. **Materials and Methods:** A quasi-experimental design was used; the intervention group members received routine postpartum contraceptive counseling in addition to an introduction to a family planning application, installed on their mobile phones. Conversely, the control group received only the routine contraceptive counseling without any mention of the application. This study utilized various validated instruments, including a contraception knowledge assessment tool, a contraception attitude scale, a mobile application assessment tool, and a decision conflict scale. **Results:** The study revealed significant differences ($p < .05$) in the use of contraceptive methods starting from the first six weeks after birth, in the continuity of the use of modern methods within the first six months after birth, and in the decision-making process. On the other hand, there were no significant differences ($p > .05$) in the occurrence of pregnancy within the first six months, the use of contraceptive methods in six months, switching between modern and traditional methods, or *vice versa*. **Conclusion:** Interactive mobile phone applications will improve family planning services by promoting early contraceptive use after birth, ensuring continuity of modern methods, and enhancing method selection. **Implications for Nursing:** Mobile phone applications provide a fordable counseling method that can improve family planning services by minimizing the need for printed materials and transportation compared to individual or group counseling sessions.

Keywords: Contraceptives, Family planning, Jordan, Mobile application, Quasi-experimental design.

What does this paper add?

1. Adopting technological advancements as mobile phone applications to enhance the quality of family planning services.
2. Mobile phone applications can effectively achieve the objectives of the family planning program by offering more innovative, cost-effective, and easily accessible solutions.

Introduction

The World Health Organization (WHO) defines postpartum family planning as the prevention of unintended pregnancies occurring within the first year following childbirth (WHO, 2013). The WHO advocates for early contraceptive counseling to be provided within 24 hours after birth, which improves uptake of contraceptive methods during the postpartum period (WHO, 2013).

Pregnant women with a birth-pregnancy interval of

less than 12 months are at the greatest risk of negative consequences for maternal and newborn health (WHO, 2013). The implementation of comprehensive postpartum family planning services, which include counseling, provision of supplies, and follow-up care, has the potential to decrease global maternal mortality rates by 32% and child mortality rates by nearly 10% (WHO, 2013). There are many contraceptive methods that can be used after childbirth, including traditional methods (lactation amenorrhea method, withdrawal, and abstinence), and modern methods (pills, implanon, intrauterine devices, Depo-Provera, and condoms) (Hopkins, 2011).

In Jordan, the Ministry of Health (MOH) is the main provider of contraceptive methods to the public and non-profit sectors (Department of Statistics (DOS), 2017). It implemented several laws and policies that strengthen the country's commitment to the family planning program (DOS, 2017). As a result of these efforts, fertility fell significantly, from 3.5 in 2012 to 2.7 in 2017 (DOS, 2017). Despite a reduction in the unmet need for family planning from 27% in 1990 to 14% in 2017, it is not in line with the objectives of the Jordanian family planning program (DOS, 2017). Additionally, the rate of early contraceptive discontinuation over a 12-month period is high for all methods (48%) (DOS, 2017). Reasons for this early discontinuation include the desire to become pregnant, method failure, the search for a more effective method, and unwanted side effects (Almalik et al., 2018).

Women's knowledge about contraceptive methods is incomplete and full of false thoughts and myths (Jordan Communication and Policy Activity (JCAP) & United States Agency for International Development (USAID), 2015). Poor counseling leads to discontinuation and increases unmet need (El-Khoury et al., 2015). However, effective counseling using novel and innovative techniques will reduce unmet needs and dropout rates (El-Khoury et al., 2015). Smartphone technologies, including applications and text messaging services that support public health practices, are becoming popular worldwide (Fedele et al., 2023). In Jordan, healthcare applications that offer healthcare services are in high demand (Akhu-zaheya et al., 2023; Qan'ir et al., 2021). As far as the contraceptive program is concerned, the new technological solutions could improve knowledge, attitudes, and levels of use (Akinola et al., 2019; Cartwright et al., 2022; Kharbouch

et al., 2021; Sridhar et al., 2015).

A Jordanian study found that sending a text message reminder to women over nine months after childbirth can boost family planning services (Prince et al., 2023). As far as we know, this is the first Arabic application to offer family planning services in Jordan. For this reason, there has been no study on the impact of contraceptive applications on family planning services in Jordan. The purpose of this study was to evaluate the impact of an interactive mobile phone application on family planning services. The results of this study may have a positive impact on the quality of family planning services by using cost-effective resources.

Methods

Design

This study was a quasi-experimental design in which participants were randomly assigned to one of two groups: intervention or control. The intervention group received routine postpartum contraceptive counseling based on (WHO) recommendations (Hopkins, 2011). Also, they installed a family planning application on their mobile phones, after which they were provided with a comprehensive explanation of the application's features, its usage, and the potential benefits it will offer both presently and in the future. In contrast, the control group received routine postpartum contraceptive counseling, which did not include any reference to the application or its installation.

Setting

This study was conducted at the Jordan University Hospital (JUH) in Amman, the capital of Jordan. It is the first teaching hospital in Jordan, with a monthly birth rate of 250 -300. This medical facility offers all family planning services (counseling, supply, and follow-up) year-round in collaboration with the (MOH) and (USAID) (JUH, 2022).

Sampling Procedure

All mothers who gave birth at the (JUH) were included in the accessible population. A convenient sample and random assignment were used. The inclusion criteria for mothers were married Jordanian women of childbearing age (15-49 years), as culturally, only married women are considered sexually active in Jordan. A complimentary medical history and spontaneous pregnancy were included. Mothers with

postpartum sepsis, severe liver disease, a history of breast or ovarian tumors, uterine fibroid, multiple cesarean sections > 4, an *in vitro* fertilization pregnancy, or tubal ligation or hysterectomy were excluded.

Sample Size

Using the power of analysis = 0.8, medium effect size, and significance level = 0.05, the required sample size is > 150 participants (Cohen, 1992). The total number of participants enrolled was 274 with 137 participants in each study group.

Instruments

Design and Development of Interactive Mobile Phone Application

The application was developed by a professional software developer in 2021. The content and characteristics of the application were derived from previous studies (Cartwright et al., 2022; Fedele et al., 2023). It was created for women aged > 15 years in simple and comprehensible Arabic language. The application interface showed the following: accurate medical information about contraceptive methods (pregnancy prevention mechanism, images for each method, effectiveness, failure rates, pros and cons). The application content was designed to provide comprehensive, accurate, and clear information regarding family planning methods while also correcting common myths and misconceptions. This content was evaluated by doctors of obstetrics and gynecology. This interactive application was improved through the addition of a two-way communication feature; namely, a WhatsApp click feature, enabling users to participate in chat without the need to save the contact number.

The application is only available on the Google Play Store under the name "Family Planning", "TANTHEM AL-OSRA". It can be downloaded at: <https://play.google.com/store/apps/details?id=com.jor3a.familyplanning>. This application is designed to be user-friendly, as it does not require users to register or log in by using an e-mail address or password, thereby making it more accessible to those with lower levels of education. Moreover, users are not obligated to obtain prior consent or make any payment to the application owner. Additionally, the application can be utilized offline, which significantly increases its availability for individuals who may have restricted financial resources.

This family planning application aims to assist users throughout different phases of their reproductive experiences, encompassing the period after marriage, following childbirth, and in contexts related to post-abortion care. This application was used for 11 months before the start of the study. Many "WhatsApp" messages were received, approximately eight to ten messages per month. The inquiries raised by the women were responded to by the counseling nurse in conjunction with a distinguished group of physicians. A series of consultations took place, offering reassurance or enabling their referral to specialized care based on their conditions.

Tools

The forward translations of the instruments into Arabic were carried out by a bilingual non-medical translator. Following this, two independent specialists in medical research evaluated the translations for their accuracy in back-translation and cultural adaptation. Several terms were adjusted to align more closely with local cultural norms; for example, "partner" was replaced with "husband," and "sex drive" was modified to "sexual intercourse." A pilot study was carried out involving 10% of the monthly birth rate, equating to 30 women, to assess the face and content validity, the clarity of the instruments, and the duration needed for participants to complete the questionnaire.

- Primary Data Collection Sheet

- 1) Socio-demographic and obstetric data: mother's age, education level, occupation, monthly income, home ownership, place of residence, gravity, parity, gestational age, planning for this pregnancy, number of living children, number of cesarean sections, mode of delivery, status of baby.
- 2) The contraceptive knowledge assessment tool is a multiple-choice tool with ten questions. The score is calculated based on the number of correct answers. It has been established at a low literacy level (Haynes et al., 2017). Previous research assessed the validity and reliability of the extended instrument, utilizing test-retest reliability to achieve a higher mean through the application of index mean (Haynes et al., 2017). In the current study, the item difficulty index was employed to determine the ratio of the total number of correct responses to the overall number of responses, encompassing both correct and incorrect answers. An item is classified as difficult if its

difficulty index falls below 25%, while it is classified as easy if the index exceeds 75%. The assessment was conducted in two phases: Initially, a test was administered to 15 mothers, followed by modifications to the questions, after which a second test was given to another group of 15 mothers. Specific items were removed, because they mentioned contraceptive methods that are not applicable in Jordan, including Essure coils and vaginal rings. Two items were excluded due to a very low difficulty index ($< 15\%$), leading to the conclusion that these items could need a medical professional to answer them.

- 3) Contraceptive attitude scale: This scale consists of five items that capture a range of both positive and negative attitudes. It employs a three-point Likert scale, allowing respondents to evaluate each item on a continuum from 1 to 3, which represents disagree, neutral, and agree, respectively. Negative items were reverse scored to ensure an accurate assessment. The overall score is derived from the mean calculation, with a score of 15 indicating a very positive attitude and a score of 5 signifying a strong negative attitude. The scale's validity and reliability have been assessed in previous studies, achieving a Cronbach's alpha ranging from 0.76 to 0.88 (Eswari et al., 2021; Smitha et al., 2021). In the current study, Cronbach's alpha was found to be 0.66.

- Follow-up Data Collection Questionnaire

- 1) Contraceptive outcomes: type of used contraceptive method starting from six weeks and at six months, switching from one method to another, continuity of use of modern methods, counseling outside JUH, people who influence the selection process, and continuation of breastfeeding.
- 2) Decision conflict scale "SURE": four items with two response options: yes, or no. The overall score is calculated by computing the mean of the responses. A score of zero indicates an extremely high decision conflict, while a score of four signifies the absence of decision conflict. It is valid and reliable; the alpha coefficient was 0.86, and Cronbach's alpha in the English version was 0.71 (O'Connor et al., 2008). In the current study Cronbach's alpha was found to be 0.56.
- 3) Evaluation of the mobile application tool: to evaluate the accessibility and satisfaction of the application.

there were three items with two response categories (yes, no). The calculation of the mean is based on a scale where zero represents a state of extreme dissatisfaction and three indicates a state of extreme satisfaction. Its validity and reliability were assessed in a previous study; Cronbach's alpha was 0.81 (Akinola et al., 2019). In the current study, Cronbach's alpha increased to 0.844.

Data Collection Procedure

- Primary phase: First, we tested the intervention group's knowledge and attitude towards family planning, then we provided contraceptive counseling (within 24 hours of birth) in their rooms before discharge, as recommended by the (WHO) (WHO, 2013). They also downloaded the application on their mobile phones. The researchers encouraged the participants to use the application while they observed. On the other hand, we tested the control group's knowledge and attitude, then provided contraceptive counseling. They have neither downloaded the application nor provided any explanation regarding it. This phase was conducted from April to June 2023.
- Follow-up phase: After six months, we contacted the participants by mobile phone to assess further results. This time frame was chosen in accordance with the (WHO) recommendations that the mother would switch to another contraceptive method if she were to use the lactation amenorrhea method after six months (WHO, 2013). This phase was conducted from October to December 2023.

Ethical Considerations

Before data collection, the Institutional Review Board (IRB) granted ethical approval to (JUH) (Decision No. 130/2023) to conduct this study. Participants received a consent form that outlined the study's objectives, their rights, and the measures implemented to safeguard confidentiality of their data. Consent was obtained in advance to facilitate follow-up communication six months after the initial data collection phase.

Adjustments were made to the original scales to enhance their alignment with the cultural context of the participants, thereby increasing their relevance and accuracy in capturing the data, as previously detailed.

Data Analysis

Data was entered and analyzed using the Statistical Package for Social Sciences (SPSS), version 24. The collected data was filtered and checked for completeness and consistency. Descriptive statistics were used. To examine the differences between groups, we used the chi-square, t-test, and multi-nominal logistic regression.

Results

Socio-demographic and Obstetric Characteristics

The socio-demographic and obstetric characteristics of the 274 participants are illustrated in Table 1 by using descriptive statistics. The recorded attrition rate was 2.1% (n=6), which can be linked to a range of social and medical factors. In particular, the contributing reasons were: one participant who was divorced, two who had lost their newborns, one whose husband was traveling,

one who underwent a prolonged postpartum period of 55 days, and one who became pregnant despite having an intrauterine device (IUD) in place.

An abnormal test was performed. The mean and standard deviation for maternal age (30.87 ± 5.86), number of pregnancies (3.57 ± 1.92), number of births (2.98 ± 1.43), number of living children (2.95 ± 1.41), and number of cesarean sections (1.20 ± 1.30). Skewness tests were used to check the normality of the data. The maternal age skewness value = 0.042. Skewness for: the number of pregnancies = 0.802, the number of births = 0.449, the number of living children = 0.442, and the number of previous cesarean sections = 0.809. This sample was normally distributed. A previous study found that the sample is normally distributed if the skewness and kurtosis values are non-zero and < 3.00 (Matore & Khairani, 2020).

Table 1. Socio-demographic and obstetric characteristics of participants

Variable	Frequency	Percentage
Mother's age		
18-25years	57	20.8%
26-33 years	121	44.2%
34-41 years	90	32.8%
42 and more	6	2.2%
Total	274	100%
Level of education		
Secondary education	85	31%
Diploma	27	9.9%
Bachelor	156	56.9%
Master / PhD	6	2.2%
Total	274	100%
Employment		
House-wife	186	67.9%
Employed	88	32.1%
Total	274	100%
Home ownership		
Owned house	183	66.8%
Rent house	91	33.2%
Total	274	100%
Place of residence		
Middle	249	90.9%
South	10	3.6%
North	15	5.5%
Total	274	100%
Family income		
100-600 JD	203	74.1%
601-1100 JD	66	24.1%
1101-1600 JD	5	1.8%
Total	274	100%
Gravidity		
First pregnancy	39	14.2%
2-3 pregnancies	109	39.8%

≥ 4 pregnancies	126	46%
Total	274	100%
Parity		
First birth	46	16.8%
2-3 births	128	46.7%
≥ 4 births	100	36.5%
Total	274	100%
Mode of delivery		
Normal birth	116	42.3%
Cesarean birth	158	57.7%
Total	274	100%
Number of cesarean sections		
Zero	114	41.6%
1-3 sections	137	50.0%
4 sections	23	8.4%
Total	274	100%
Gestational age		
Term	259	94.5%
Pre-term	15	5.5%
Total	274	100%
Planning for pregnancy		
Planned	194	70.8%
Un-planned	80	29.2%
Total	274	100%
Condition of the baby		
Nursery	235	85.8%
Neonatal intensive unit	39	14.2%
Total	274	100%
Number of living children		
1 child	48	17.5%
2-3 children	129	47.1%
≥4children	97	35.4
Total	274	100%
Breastfeeding till six months		
Yes	146	53.3%
No	128	46.7%
Total	274	100%
Counseling out the hospital		
Yes	62	22.6%
No	212	77.4%
Total	274	100%
Shared decision		
Alone	55	20.0%
Husband	192	70.1%
Her mother /sisters/friends	17	6.3%
Health care provider (doctor/nurse)	10	3.6%
Total	247	100%

a- JD Jordan Dinar = 1.41 Dollar.

Assessment of Participants' Knowledge and Attitudes

To address potential biases in the assignment process that may affect the outcomes and to uncover any knowledge gaps or misconceptions, we evaluated the

knowledge and attitudes of both groups prior to the intervention. The differences in knowledge and attitudes between the two groups before the intervention are illustrated in Table 2. Our analysis, conducted using a t-test with a 95% confidence interval, indicated that

there were no significant differences in knowledge or attitudes between the two groups.

Table 2. Differences in knowledge and attitudes between the two groups

Variable	Intervention group		Control group		<i>t</i>	<i>df</i>	<i>P</i> -value
	Mean	SD	Mean	SD			
Knowledge	6.40	1.87	6.04	1.86	1.58	272	0.114
Attitude	13.95	1.59	13.76	1.63	0.972	272	0.332

* Significant < 0.05

Effect of Application Usage on Groups

The results of contraceptive outcomes are summarized in Table 3. By using chi-square, there were no significant differences in the occurrence of pregnancy in the first six months, switching from

modern to traditional methods or *vice versa*. In contrast, with modern methods, there was a significant difference in the continuity of using modern methods from six weeks to six months.

Table 3. Contraceptive outcomes

Variable	Intervention group		Control group		<i>X</i> ²	<i>df</i>	<i>P</i> -value
	<i>n</i>	%	<i>n</i>	%			
Pregnant in the first six months					0.081	1	0.776
Yes	6	4.4%	7	5.1%			
No	131	95.6%	130	94.9%			
Method at six weeks of birth					9.13	2	0.009*
No method	13	9.5%	29	21.2%			
Traditional method	68	49.6%	69	50.4%			
Modern method	56	40.9%	39	28.4%			
Method at six months of birth					2.15	2	0.341
No method	7	5.1%	9	6.6%			
Traditional method	61	44.5%	71	51.8%			
Modern method	69	50.4%	57	41.6%			
Switching from traditional to modern					0.489	1	0.484
Yes	17	12.4%	21	15.3%			
No	120	87.6%	116	84.7%			
Switching from modern to traditional					0.147	1	0.702
Yes	4	2.9%	3	2.2%			
No	133	97.1%	134	97.8%			
Continuity in the use of modern methods					4.285	1	0.038*
Yes	52	38.0%	36	26.3%			
No	85	62.0%	101	73.7%			
	Mean	SD	Mean	SD	<i>t</i>	<i>df</i>	<i>P</i>-value
Decisional conflict	3.80	.405	2.31	1.52	11.00	272	0.000*

* Significant <0.05

By using the t-test, there was a significant difference between the groups in the decision conflict in the control group (2.31 ± 1.52) and the intervention group (3.80 ± 0.405 ; $t(272) = 11$, $p = 0.000$). The control group had high levels of decision conflict regarding contraceptive methods.

The remaining contraceptive outcomes are summarized in Table 4. Multinomial logistic regression was performed to test whether the application use could predict the contraceptive method starting from six weeks. The entire regression model was statistically significant (Nagelkerke $R^2=0.045$, $X^2(2) = 9.13$,

$p < 0.05$). It was found that the application use would be expected to reduce the use of traditional methods by a factor of 0.788 and increase the use of modern methods by a factor of 1.164, compared to the control group.

Multinomial logistic regression was performed to test whether the application usage could predict the

contraceptive method at six months. The entire regression model was not statistically significant (Nagelkerke $R^2 = 0.010$, $X^2(2) = 2.15$, $p > 0.05$). It was found that the application usage did not significantly predict using traditional or modern methods at six months compared to the control.

Table 4. Multinomial regression analysis for predicting contraceptive methods

Variable (intervention group)	B	Standard error	Exp (B)	95% confidence interval	P-value
Traditional methods at six weeks	0.788	0.375	2.198	1.054-4.584	<0.05*
Modern methods at six weeks	1.164	0.349	3.203	1.481-6.928	<0.05*
Traditional method at six months	0.100	0.533	1.105	0.388-3.142	>0.05
Modern methods at six weeks	0.442	0.535	1.556	0.546-4.440	>0.05
* Significant <0.05 a-The reference category is the control group. b-No method is set to zero, because it is redundant.					

The analysis performed using descriptive statistics revealed that 29.9% of the participants in the intervention group ($n = 82$) returned to use the application after their hospital discharge to obtain particular information. The vast majority of the participants in the intervention group were satisfied; they noted that the application contained information, was easy to use, and they would have recommended it to others ($n=136$, 49.6%).

Discussion

Initially, the results of this study showed significant differences between the two groups in the used method starting from six weeks. The intervention group used modern methods more frequently than the control group. This means that application usage will improve early uptake of modern methods in the postpartum period. That is consistent with another study that found that early contraceptive counseling and mobile applications increased the use of modern methods by increasing awareness about fertility restoration, which promotes the behaviors of seeking, selecting, and correctly using contraceptives as quickly as possible (Hebert et al., 2018).

Furthermore, this study reported significant differences between the two groups in the continuity of using modern methods from six weeks to six months. This continuity resulted from knowledge of the mechanism of action, possible side effects, and adaptation to them, thereby reducing the frequency of discontinuation or early discontinuation. This is

consistent with the results of a previous study that demonstrated that counseling and mobile applications can reduce discontinuation and promote switching rather than quitting (Cartwright et al., 2022). This highlights the importance of this application being supported by a WhatsApp click, so that the mother can deal with side effects that lead to discontinuation anytime and anywhere. Furthermore, this application reduces geographical distances and is cost-effective, as shown in a previous study (Smith et al., 2014).

Finally, the results showed significant differences between groups in the decision-making process. The intervention group had fewer decision conflicts than the control group. Considering that the internal struggle to decide what is best and has the least impact on health is primarily due to confusion, false thoughts or myths, and a lack of information (Mruts et al., 2022). The counseling session and application helped the mother make her decision smoothly. This is consistent with other studies that reported that the application provided information and positively changed attitudes, which helped guide contraceptive choice (Fedele et al., 2023; Sridhar et al., 2015).

In contrast, the findings revealed no differences between groups in the occurrence of pregnancy at six months, methods used in six months, switching from modern to traditional methods or *vice versa*. The impact of the application on these parameters has not been evaluated in previous studies. Most previous studies have been the result of population surveys or examined the effects of one-or two-way text messaging on sexual

health, knowledge, attitudes, and appointment adherence (Prince et al., 2023). In this study, we examined these parameters based on their impact on reproductive health. First, the occurrence of pregnancy within the first six months after birth cannot be ignored, even if the percentage is small, due to the negative impact on the health of the mother and the newborn (WHO, 2013). Second, the switch from one method to another occurred due to recent changes in the mother's health, undesirable side effects, or the desire for a more effective method (Zimmerman et al., 2021). This switch should be taken into consideration, so we should promote safe switching to reduce the possibility of stopping or using other inappropriate methods (Zimmerman et al., 2021). Also, the timing of transitions or overlaps should be taken into account to prevent sex without protection (Zimmerman et al., 2021). This safe and appropriate switching can be achieved through effective counseling and the use of technology with two-way communication solutions to facilitate counseling and follow-up (Zimmerman et al., 2021).

On the other hand, we cannot ignore the impact of cultural differences, surrounding thoughts and myths, and social media influences on contraceptive usage (Pratt et al., 2014). The question remains about how significantly these factors influenced the decision-making process, regardless of the effectiveness of the counseling and the used technological resources. We have pinpointed various factors in this study, such as fears associated with infertility and worries about potential side effects. However, we have developed strategies to address these cultural and social challenges through effective counseling practices within a non-judgmental environment. This is accomplished by offering clear information, encouraging open communication, and practicing active listening. Our objective is to enable couples to make well-informed decisions. It is crucial to analyze each of these factors in depth in future research.

From another perspective, this study found that the husband was the main reference to the choice of the contraceptive method. This is consistent with another study finding that contraception is assumed to be a shared responsibility between couples (Komasawa et al., 2020). This study highlights the importance of including the husband in counseling sessions. Our application provides the husband with sufficient information in case of his absence and a clear mechanism for inquiries

(WhatsApp click).

We should note that a quarter of the participants in the intervention group returned to use the application to obtain information or inquire. This presented data does not serve as a definitive proof of the application's effectiveness; however, it may suggest that the application was attractive and user-friendly, despite the low percentage. This is consistent with previous studies reporting that health applications were appropriate, accessible, interesting, and available over time for teaching about reproductive health (Akinola et al., 2019; Smith et al., 2014). Mobile contraceptive applications can be useful for disseminating health information (Rousseau et al., 2019; Timmons et al., 2018). Finally, it will save time for healthcare providers and the general public (Akinola et al., 2019; Sridhar et al., 2015). One possible interpretation is that those who chose not to return to use the application may have been satisfied with the information obtained during the pre-exit counseling session, or they may have possessed sufficient prior knowledge on the topic. In this study, we did not measure the number of WhatsApp messages received from the participants in the study. Additionally, we did not consider this metric as a measure of the application's effectiveness, as it has been utilized for around two years and has also received messages from women who were not part of the research.

Conclusion

Interactive mobile phone applications will improve family planning services by improving early use of contraceptive methods starting from six weeks of birth and ensuring the continuity of use of modern methods by understanding the mechanism of action, possible adverse effects, and how to manage them. In addition, this application will improve the process of comparing and choosing the most suitable method based on their health status, suitability for the body, effectiveness, and the advantages and disadvantages of each method. Finally, this application can increase access to contraceptive services, which improves the sexual and reproductive health of couples.

Limitation

The findings can't be generalized, as a result of using a convenience sample.

Recommendations

It is recommended to follow-up with the mothers in the first year of using the method to improve continuity of use or ensure safe switching. Using this cost-effective technology in counseling will reduce the need for paper, ink, time, and effort. It is also recommended to replicate this study with a random sample. Many studies should be conducted to examine the influence of socio-demographic, obstetric, cultural, and religious factors on contraceptive choice. Longitudinal studies are essential for evaluating the sustained impact of family planning applications, typically covering durations that extend from six months to multiple years.

Implications for Nursing

The incorporation of family planning applications into nursing practice significantly improves the quality of care by addressing the reproductive health requirements of couples. These applications act as reliable sources of information on various family

planning methods during counseling sessions, thereby aiding couples in their decision-making processes.

The messaging capabilities of these applications promote effective communication between couples and counseling nurses, enabling follow-up, inquiries and referrals when necessary.

Additionally, these applications provide resources that support continuous professional growth. By connecting nurses with up-to-date research, guidelines, and educational materials, they enhance their knowledge and competencies while keeping them informed about the most recent advancements in family planning practices and technologies.

Conflict of Interests

There is no indication of any conflict of interests.

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