

Effect of the REDI Counselling Approach on the Use of Modern Postpartum Contraceptive Methods among Adolescent Mothers in Iran

Zahra Moudi

<https://orcid.org/0000-0002-3230-8320>

Zahedan University of Medical

Sciences, Iran

zz_moudi@yahoo.com

Mahtab Umarzeh

<https://orcid.org/0000-0003-0617-6528>

Zahedan University of Medical

Sciences, Iran

omarzehi0000@gmail.com

Hossein Ansari

<https://orcid.org/0000-0003-2755-7864>

Zahedan University of Medical

Sciences, Iran

ansarih88@gmail.com

Abstract

Rapid repeat pregnancies expose adolescent mothers and their neonates to a greater risk of adverse outcomes. One way to decrease rapid subsequent pregnancies is to increase the use of postpartum contraceptives. The study aimed to investigate the effect of a counselling method for family planning on the decision-making about the use of postpartum modern contraceptives immediately, 1 week, and 2 months following the counselling session. This quasi-experimental study was carried out on 352 adolescent mothers who visited health centres for baby care at 4 to 6 months following childbirth. The intervention group received one counselling session for family planning based on the model of Rapport-building, Exploring, Decision-making, and Implementing the Decision (REDI). The control group received routine services. The adolescent mothers in the intervention group were more likely to use modern contraceptives 1 week and 2 months following the counselling session. Two months after the counselling session, the demand for family planning with modern methods was calculated at 29 per cent and 78 per cent in the control and intervention groups, respectively. The results showed that the REDI counselling approach was effective as the use of modern contraceptives reported higher in the intervention group than the control group. Given the demonstrated link between the REDI framework for family planning counselling and the use of modern contraceptives, healthcare providers should

be trained in counselling skills based on the REDI framework to strengthen counselling on contraception.

Keywords: adolescent, contraception, family planning services, counselling

Introduction

Adolescent pregnant mothers in the age range of 10 to 19 years were confronted with various complications following pregnancy and childbirth. These complications are also the leading causes of maternal mortality among female adolescents in the age range of 15 to 19 years in low- and middle-income countries (Chandra-Mouli et al. 2014; World Health Organization 2018a).

According to the reports of the World Health Organization in 2018, the adolescent birth rate globally was approximately 44 per 1 000 female adolescents in the age range of 15 to 19 years (World Health Organization 2018a). In Iran, the age-specific fertility rate among adolescents has been reported at about 23 per 1 000 adolescent girls in the age range of 15 to 19 years (World Health Organization 2019a).

The provinces of Sistan and Baluchestan in Iran have the highest total fertility rate (3.5 births per woman) and the percentage of children under the age of 15 years (Moridi, Amin Shokravi, and Ahmadi 2019; Roudi, Azadi, and Mesgaran 2017). Previous studies also indicated that in Sistan and Baluchestan, 40 per cent of female adolescents were married before the age of 18 years. Early marriage contributes to the high total rate of fertility in the aforementioned provinces (Montazeri et al. 2016).

Various micro- and macro-level factors facilitate or hinder early pregnancy among adolescents (World Health Organization 2019b). However, a number of adolescents experience second or more closely spaced pregnancies, and these subsequent pregnancies are not planned by many of them (Norton, Chandra-Mouli, and Lane 2017). One way to decrease rapid subsequent pregnancies among adolescents is to increase the use of postpartum contraceptives to achieve the desired birth spacing (UNFPA 2015).

Counselling on family planning during late pregnancy and after childbirth or abortion can help women to choose a modern contraceptive method that best suits them (World Health Organization 2013). It is claimed that the Rapport-building, Exploring, Decision-making, and Implementing the Decision (REDI) counselling framework, by emphasising women's sociocultural context, individual circumstances, and preferences, can help to choose a family planning method more quickly and can provide the relevant information for the different needs of women (The ACQUIRE Project 2008).

Purpose of the Study

Based on the guidelines by the World Health Organization, voluntary family planning and the decrease of adolescent pregnancy should be advocated through the identification and evaluation of interventions that affect the use of modern contraceptives among

adolescent girls (World Health Organization 2018d). With this background in mind, this study aimed to investigate the effect of family planning counselling (using the REDI framework) on decision-making about the use of postpartum modern contraceptives immediately, one week, and two months following the counselling session among adolescent mothers (at four to six months following childbirth) in Zahedan, Iran.

Methods

Study Design

This quasi-experimental study was conducted on 352 adolescent mothers at 4 to 6 months following childbirth in Zahedan (the capital of Sistan and Baluchestan), Iran, from 3 October 2018 to 2 July 2019.

Sampling

Adolescent mothers (age range: ≤ 19) with neonates in the age range of 4 to 6 months who visited the urban–rural health centres of Zahedan were included in the study. The age range of 4 to 6 months was chosen because the evidence emphasised the use of the Lactational Amenorrhea Method (LAM) as a temporary contraceptive method up to 6 months following the childbirth. This provides an opportunity for women to choose and use another modern contraceptive method since they will not be eligible to use this method after 6 months (USAID 2009; 2018).

In Iran, in accordance with the guidelines of the World Health Organization, women are recommended to start giving neonates complementary food at six months of age (World Health Organization 2018b). Therefore, with the onset of complementary feeding, women will no longer be eligible to use the LAM. In addition, based on the evidence, it was shown that women's fertility can return with or without returning menses. Consequently, regardless of menstrual status, women should be protected from unintended pregnancies (Moore et al. 2015).

The inclusion criteria were (1) the couples living together (i.e. husband not in prison, not living abroad or in other cities, not divorced, and not widowed), (2) no history of mental illness, psychiatric antecedents or illicit drug use, (3) the ability to speak and understand Persian, and (4) the last pregnancy resulting in a live birth (for example, no abortion or ectopic pregnancy). The exclusion criteria were (1) the use of modern contraceptive methods, (2) current pregnancy, (3) no attendance at the counselling sessions, (4) hysterectomy after childbirth, and (5) unwillingness to continue participation in the study.

In this study, the adolescent mothers were chosen using multistage sampling. Firstly, the city was stratified into 3 regions (i.e. northern, central, and southern regions) based on socio-economic conditions. Subsequently, each region was divided into 3 areas (i.e. west, central, and east) that resulted in 9 blocks. To lower the risk of information contamination provided by the intervention, a number ($n = 26$) of health centres were

randomly selected (using simple random sampling) in each block as the intervention group (including the health centres in urban areas).

Then, the next health centres ($n = 26$) were chosen as the control group (containing the health centres in urban areas). Furthermore, the data were gathered from 8 health posts in the rural areas of Zahedan (including 4 health posts as the intervention group and 4 health posts as the control group). At each health centre, all the eligible adolescent mothers with neonates in the age range of 4 to 6 months were assigned to the study groups using the convenience sampling technique (Figure 1).

The names and addresses of all the adolescent mothers were identified through an electronic medical record system called “integrated Ceib” software. All the information on households (for example, the age of the mothers, the age of the neonates, and telephone numbers) and the provided types of healthcare (for example, vaccination, breastfeeding, and contraception use) for family members were documented in the aforementioned software.

In this study, modern contraceptive methods were classified under two groups, namely, (1) short-acting contraceptives (i.e. oral contraceptive pills, male condoms, injectable hormones, and spermicides), and (2) long-acting and permanent methods (i.e. male and female sterilisation, the intrauterine device (IUD), and hormonal implants) (Hubacher and Trussell 2015). In addition, female condoms, patches, diaphragms and cervical caps, spermicidal agents, vaginal rings, sponge, and subdermal implants are not accessible in the governmental health centres of Iran.

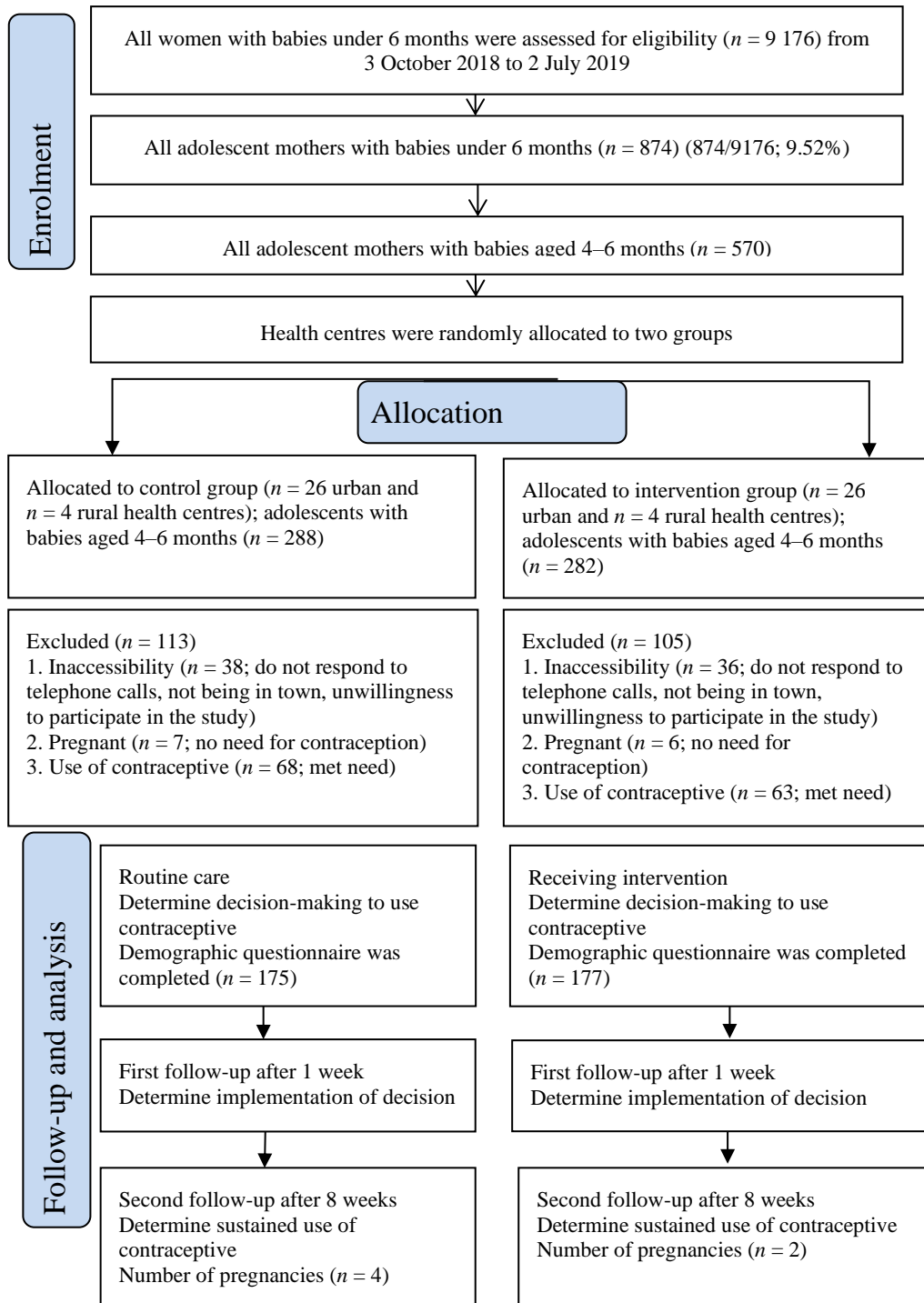


Figure 1: Flow diagram of study participants

Control Group

The observations of midwives in the health systems of Zahedan showed that on average four healthcare providers (i.e. midwives or health experts) visited the participants in a single room. In such a situation, where a number of adolescent girls are in the same room simultaneously, their privacy and confidentiality cannot be guaranteed.

Six weeks after giving birth, the participants were recommended to use a modern contraceptive method. There was a one-way flow of information from the healthcare providers to the participants indicating “it is better to use a (modern) contraceptive method”. In addition, owing to the crowded conditions at the health centres, the language barrier (although the participants speak Baluch, the healthcare providers usually speak Persian), and the lack of attention to the demographics of the participants (for example, the low level of education), the provided information does not usually meet the individual needs of the adolescent mothers.

The data collection form was completed for the participants in the control group (with neonates of four to six months) who received routine care. In addition, by using telephone calls, face-to-face interviews, and tracking the participants’ information in the electronic medical record system, the use of contraceptives and the frequency of pregnancy among these participants were determined until two months after the counselling session by the first researcher.

Intervention Group

The second researcher contacted the participants via telephone calls, and verbal informed consent was obtained from the participants. Moreover, the objectives of the study were explained to the participants, and mutually agreed appointments were arranged for a counselling session at the health centre. A counselling session that lasted 30 minutes using the REDI counselling approach was held (Table 1). The counselling session was held in the presence of the participants (and sometimes the participants’ mother or mother-in-law) and the counsellor.

The counselling session was held in a separate room other than the maternal and child health service room (which was not in use at the time of counselling). The counsellor had an MSc degree of counselling in midwifery with a Baluchi background which enabled her to speak with the Baluchi participants in the same language. At the end of the session, a pamphlet containing the participants’ chosen contraception method was given to the literate participants.

Pregnancy was reasonably ruled out if the participants did not have any symptoms or signs of pregnancy and met the following criteria: (1) menses were ≤ 7 days after the initiation of normal menses; (2) the couples had no sexual intercourse since the start of the last normal menses; and (3) a reliable contraceptive method was correctly and consistently used (Min et al. 2015).

In case of doubt, a beta human chorionic gonadotropin blood test was used to detect or exclude pregnancy. In addition, at the end of the study, all the pregnant adolescents underwent an ultrasound to ensure that they were not pregnant before starting the study. Accordingly, the pregnant adolescents were excluded from the study.

The data collection form was completed for all the participants, and they were asked about their decision on the use of a modern contraceptive method after the counselling session. Furthermore, the participants were followed for one week to determine their use of modern contraceptive methods (i.e. the implementation of the decision) and two months after the counselling session to determine the continued use of contraceptive methods and frequency of pregnancy (Figure 1).

Table 1: Phases and steps of REDI

Phases	Steps
Phase 1: Rapport-building	<ol style="list-style-type: none"> 1) Greet participant with respect (thank the woman and her companion for accepting the invitation and attending the counselling session) 2) Allow participant to introduce herself 3) Explain the objectives of the study 4) Assure confidentiality of data by keeping the data anonymous
Phase 2: Exploration	<p>When completing the demographic questionnaire (e.g. menstruation status, and how to feed the baby), the participants often asked questions that initiated the counselling and helped focus the counselling. For the convenience of the participants and to ensure no interruptions, the questionnaire was completed during the participants' talk.</p> <ol style="list-style-type: none"> 1) For new clients: If they had already considered a contraceptive method, discuss their preferred method; if no method was preferred, information was given as necessary to identify the participants' needs, and to correct misconceptions 2) For participants with previous experience with contraceptives (gravid $n = 2$, women with previous experience after marriage): Ask about their experiences, if the experiences were positive, they were enhanced; if the experiences were negative, ask why, and how (e.g. ignore oral contraceptive pills, and pregnancy), give information to correct misconceptions and to share possible solutions; and, if necessary, discuss new methods
Phase 3: Decision-making	<ol style="list-style-type: none"> 1) After choosing the contraceptive method, check if the participant needs other information. For example, explain that the best time for inserting an IUD can be at any time in a woman's menstrual cycle, and if a woman is amenorrhea during lactation, the provider should be certain that she is not pregnant. Explain the place of procurement and the cost of contraceptives as there is not always free access to the family planning methods at the health centres, owing to Iran's shift in family planning policies

Phases	Steps
	2) Ask the participants about their decisions
Phase 4: Implementing the decision	<ol style="list-style-type: none"> 1) Some participants made their decision immediately after the counselling session (they were very happy and thankful because their need for family planning had been met; something they were sometimes ashamed to ask for) 2) Some participants wanted to consult with their spouse or other key members before making the decision, therefore telephone numbers were exchanged to provide the follow-up and answers to the participants' questions if needed 3) The participants were followed one week and two months after the counselling session

Data Collection

The data were collected using an interviewer-administered form. Furthermore, some data (such as the age and parity) were gathered using the electronic medical record system. The interviewer-administered form consisted of the following four parts:

- the demographic characteristics of the participant and her husband (such as the place of residence, age, ethnicity, educational level, polygamy, other people in the participant's household, and individuals involved in the decision-making);
- the history of pregnancy (for example, the gravidity, the number of live children, and the number of abortions);
- fertility behaviours (such as the beginning of menses or the last menstrual period, sexual intercourse, and history of contraception and fertility control after the last childbirth) and breastfeeding behaviours;
- the participant's decision-making about modern contraceptive use immediately, 1 week, and 2 months after the counselling session, the desire to have another neonate in the next 12 months, and the occurrence of pregnancy after 2 months.

The questions were prepared based on the literature review and aims of the study. The content of the form was also checked by an expert in the field.

Data Analysis

All the data were entered using the SPSS software (version 21) to perform the statistical analysis. The Kolmogorov–Smirnov test was used for assessing the normality of continuous data. The Mann–Whitney U test was employed to compare the non-normal distributed data. In addition, the chi-square and Fisher's exact tests were used to compare the categorical and binary data.

The multilevel mixed-effects univariate logistic regression was used to evaluate the effect of the REDI counselling approach on the use of contraceptives after two months.

Both fixed (i.e. the group coefficient) and random (i.e. at the level of the health centre) effects were estimated with the consideration of the sampling strategy.

In addition, since the adolescent mothers' decision about the use of contraceptives was measured immediately, 1 week, and 2 months following the counselling session, the generalised estimating equation (GEE) method was used to analyse the panel data. A *p*-value of less than 0.05 was considered statistically significant. Two-tailed tests were used to compare the variables between the control and intervention groups.

Furthermore, the “demand for family planning satisfied with modern methods” (mDFPS) was calculated. In the numerator, there were adolescent mothers who were using modern contraceptive methods two months after the counselling session. In addition, the denominator of mDFPS, women in need of contraception, was defined as women who were fertile and did not want to become pregnant at least in the next year, those who were unsure if or when they want to become pregnant, and pregnant women with an unwanted pregnancy (World Health Organization 2018c).

Ethical Considerations

This study was approved by the Ethics Committee of the Zahedan University of Medical Sciences, Zahedan, Iran (2 September 2018; IR.ZAUMS.REC.1397.223). Additional permissions were obtained from the Zahedan Deputy of Health and the directors of all the healthcare facilities.

Results

A total of 9 176 women who visited the health centres and health posts of Zahedan with neonates of less than 6 months were assessed for the eligibility criteria. The obtained data showed that out of 9 176 women, 874 were adolescent mothers with neonates of under 6 months (874/9,176; 9.52%). Based on the obtained findings, only 570 adolescent mothers had newborns in the age range of 4 to 6 months, 218 of whom were excluded because they were not eligible for the study ($n = 144$) or were inaccessible at the time of the study ($n = 74$). Finally, a total of 355 adolescent mothers were analysed in the control ($n = 175$) and intervention ($n = 177$) groups, respectively (Figure 1).

The ages of the husbands of the participants in the study were not significantly different between the two groups ($P = 0.29$). The mean values of the husbands' ages in the intervention and control groups were 23.62 ± 3.59 (with a minimum of 17 years and maximum of 36 years) and 23.85 ± 3.12 (with a minimum of 17 years and maximum of 38 years) years, respectively.

The obtained data showed that most husbands were illiterate or had elementary education in the intervention (53.6%) and the control (56%) groups. In addition, only 2.3 per cent and 4 per cent of the husbands had university education in the intervention and control groups, respectively ($P = 0.77$). Furthermore, 53 per cent and 47 per cent of

the husbands in the intervention and control groups were unemployed or day labourers, respectively. There was no statistically significant difference between the two groups regarding the occupational status of the husbands ($P = 0.84$).

Table 2 gives the demographic characteristics of the participants in the study. During the study period, all the couples lived together and had sexual intercourse after childbirth. At the time of the study, 0.66 per cent (115/175) and 0.72 per cent (128/177) of the participants resumed their menses in the control and intervention groups, respectively. Other participants (34% and 28% in the control and intervention groups, respectively) were still reported with postpartum amenorrhea ($P = 0.4$). In addition, 104 (59%) and 103 (58%) of the participants breastfed their neonates in the control and intervention groups, respectively. Other participants fed their newborns with formula or breast milk and formula ($P = 0.42$).

Table 2: Comparison of demographic characteristics of the participants between the groups

Characteristics		Groups		P-value*
		Intervention (n = 177)	Control (n = 175)	
Age (years)	Mean (SD)	17.38 (1.21)	17.19 (1.33)	0.5
	Range	13.09–19	12.07–19	
Gravid	Mean (SD)	1.33 (0.53)	1.30 (0.57)	0.37
	Range	1–3	1–4	
Number of living healthy children	Mean (SD)	1.25 (0.48)	1.22 (0.50)	0.34
	Range	1–3	1–4	
Number of sons	Mean (SD)	0.64 (0.62)	0.63 (0.62)	0.78
	Range	0–3	0–3	
Number of abortions	Mean (SD)	0.10 (0.37)	0.07 (0.31)	0.40
	Range	0–2	0–3	
		N (%)	N (%)	P-value†
Place of residence:				
City		153 (86)	145 (83)	0.37
Village		24 (14)	30 (17)	
Ethnicity:				
Baloch		147 (83)	151 (86)	0.74
Fars		30 (17)	24 (14)	
Education:				
Illiterate		48 (27)	53 (30)	0.74
Primary school		78 (44)	73 (42)	
Secondary school		39 (22)	41 (23)	
Diploma		12 (07)	8 (5)	
Polygamy:				
Yes		9 (05)	10 (6)	0.79
No		168 (95)	165 (94)	
People involved in decision-making				
Participant		77 (44)	78 (45)	

Husband	15 (09)	21 (12)	0.23
Both	81 (45)	67 (38)	
Mother-in-law	4 (02)	9 (05)	
People sharing the household:			0.78
Mother/sister-in-law	9 (05)	12 (07)	
Mother-in-law/co-wife	110 (62)	107 (61)	
Only husband (nuclear family)	58 (33)	56 (32)	

* Mann–Whitney U test

† Chi-square test

The comparison of the contraceptive methods chosen by the participants after the counselling session is shown in Table 3. A total of 16 participants in the intervention group decided to use an IUD among whom 10 participants actualised their decision after 7 days. The IUDs were inserted by the second researcher. After the insertion of IUDs, the participants visited the nearby health centre for follow-up services or removal of the IUD to save time and money.

Table 3: Comparison of contraceptive methods chosen by the participants after the counselling session between the control group ($n = 175$) and the intervention group ($n = 177$)

Contraceptive method	Immediately after counselling session		One week after counselling session		Two months after counselling session	
	Control	Intervention	Control	Intervention	Control	Intervention
	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)
Oral contraception pills	7 (50)	44 (40)	23 (59)	58 (47)	26 (51)	62 (45)
Male condom	4 (29)	41 (37)	13 (33)	50 (41)	22 (43)	57 (41)
Injectable	1 (7)	9 (8)	1 (2)	5 (4)	1 (2)	8 (6)
Intra uterine device	2 (14)	16 (15)	2 (5)	10 (8)	2 (4)	11 (8)
Total	14 (100)	110 (100)	39 (100)	123 (100)	51 (100)	138 (100)

The observations of the researchers showed that although the adolescent mothers were more likely to live in the suburbs than in the central areas, the health centres in the suburbs were often without trained or skilled staff to insert IUDs. Therefore, it was less likely that the staff recommended the use of IUDs to the adolescent girls. Moreover, if they recommended the use of IUDs, either they were not available in the health centres or the method was forbidden by the family members.

The choice of contraceptives and the use of contraceptives after the counselling session by the participants are shown in Table 4. The results of the GEE method showed that the counselling approach was effective in promoting the use of modern contraceptive methods and was reported as greater in the intervention group than in the control group (OR = 2.9; $P = 0.0001$).

Table 4: Decision-making regarding the choice and use of contraceptives after the counselling session between the groups

Choice and use of contraceptives	Groups		P-value*
	Intervention (n = 177)	Control (n = 175)	
Decision-making regarding contraceptive use after counselling session			
Yes	110 (62)	14 (08)	< 0.001
No	67 (38)	161 (92)	
Contraceptive use after 1 week			
Yes**	123 (70)	39 (22)	< 0.001
No	54 (30)	136 (78)	
Contraceptive use after 2 months			
Yes**	138 (78)	51 (29)	< 0.001
No	39 (22)	124 (71)	

* Chi-square; since there were no statistically significant differences between the two groups in terms of variables and determinants of contraception use, an unadjusted *p*-value was reported

** Real met need (participants who are currently using a modern family planning method)

In addition, the multilevel mixed-effects univariate logistic regression was used to evaluate the effect of the REDI counselling approach on the use of contraceptives after 2 months. With the consideration of the sampling strategy, it was shown that the intervention was effective and that the choice of using modern contraceptives was reported higher in the REDI counselling (intervention) group than in the control group (OR = 8.62; *P* = 0.0001; 95% CI: 5.20, 14.29) (Table 5).

Table 5: The multilevel mixed-effects univariate logistic regression model

Log likelihood = -198.9011	Prob > chi2 = 0.0000					
Use of contraceptive after 2 months	Odds ratio	Std. err.	Z	P> z	[95% Conf. interval]	
Group	8.623759	2.223374	8.36	0.000	5.202836	14.29398
_cons	.4113178	.0713991	-5.12	0.000	.2926985	.5780087
Health centre name						
Var (_cons)	.0460784	.1814087			.0000205	103.4291

The most common reasons for not using modern family planning contraceptive methods among all the participants (*n* = 347; 4 missing participants) were a lack of knowledge (216/347; 63%), husband opposition, the lack of decision-making power (64/347; 18%), the use of the LAM (36/347; 10%), fear of infertility (20/347; 6%), and fear of contraceptive side effects (11/347, 3%). In addition, the results showed that the main

causes of the participants ($n = 66$; 1 missing participant) not making their own decisions about the use of contraceptives immediately after counselling were discussions with their spouses (55/66; 83%), the use of the LAM (7/66; 11%), 3), the husband and his family opposing the use of contraceptives (3/66; 5%), and uncertainty and reluctance to use contraceptives (1/66; 1%).

The data showed that 2 months after the counselling session, 93 per cent (162/175) and 94 per cent (166/177) of the participants in the control and intervention groups, respectively, reported that they did not wish to become pregnant at least in the next year ($P = 0.6$). Moreover, 73 per cent (119/162) and 18 per cent (31/166) of the participants in the control and intervention groups, respectively, did not use modern contraceptive methods ($P < 0.001$).

In the numerator, the participants were fertile and sexually active; however, they were not using any modern contraceptives. Furthermore, it was reported that they did not intend to become pregnant in the next year (those willing for birth spacing). In addition, pregnant participants with an unwanted pregnancy, who became pregnant and did not use contraceptives after the initiation of the study, were also considered in need of contraception (United Nations 2014).

After the study, 2 per cent (4/175) and 1 per cent (2/177) of the participants in the control and intervention groups, respectively, experienced unwanted pregnancies. The data showed that 22 per cent (42/188) of all the participants in the control and intervention groups were provided with contraceptives by private sectors. The reasons for choosing the private sectors to be provided with contraceptives were the unavailability of contraceptives (95%) and the poor quality of services (5%) in the governmental health centres. In addition, 2 months after the counselling session, the mDFPS values were calculated at 29 per cent (51/175) and 78 per cent (138/177) in the control and intervention groups, respectively.

Discussion

The results of the study revealed that the participants who participated in the family planning counselling session (using REDI) were significantly more likely to use modern contraceptives in the postpartum period. Two months after the counselling session, the mDFPS values were calculated at 29 per cent (51/175) and 78 per cent (138/177) in the control and intervention groups, respectively.

This difference can be explained by considering three important aspects related to the REDI counselling approach. Firstly, in line with the results of previous studies, the findings of the present study revealed that the participants had a low level of education and poor contraceptive knowledge (Li et al. 2020; Mardi et al. 2018). In addition, the data showed that most of the participants lived with their husbands in an extended family and were more likely to obtain information about contraceptives from the married women who shared their households (Khan and Sadia 2014).

Therefore, it was more likely that the participants received misinformation, myths, misconceptions (for example, about lactational amenorrhea and infertility after birth control), and exaggerated beliefs about the side effects of contraceptive methods (Li et al. 2020; Mardi et al. 2018). Consequently, all these misinformation and misconceptions might hinder the use of modern contraceptives (Dev et al. 2019; Mardi et al. 2018).

In such settings, the REDI counselling framework helps healthcare providers to avoid overloading the adolescent mothers with detailed information about every contraceptive method (EngenderHealth 2018). Instead they emphasise the women-specific circumstances of life and experiences and background knowledge of modern contraceptive methods so that the adolescent mothers can choose a contraceptive method which meets their unique needs (The ACQUIRE Project 2008).

Secondly, the results of the study showed a low frequency of modern contraceptive use among the participants who receive routine family planning services four to six months after childbirth. This may be explained by the fact that in Iran, despite integrating contraceptive counselling into maternal-child healthcare visits and recommending healthcare providers to provide all mothers with family planning counselling during four to six weeks after childbirth, the quality of the family planning counselling is uncertain (Mardi et al. 2018; Mohammad-Alizadeh et al. 2009).

In line with the findings of previous results, focusing on women's declarations in counselling sessions, the findings of the present study showed that decision-making and the use of contraceptive methods not only rely on knowledge about contraceptive methods but also on the sociocultural context in which contraceptives are used (World Health Organization 2015). For example, husbands and key family members' opposition to modern contraceptive use and women's lack of decision-making power can negatively affect modern contraceptive uptake (Shahabuddin et al. 2016). Therefore, adolescent mothers not only need correct and appropriate information according to their special circumstances but also need help to implement their decisions.

As a result, instead of simply informing adolescent mothers of the way in which to use the method and when to return for follow-ups (The ACQUIRE Project 2008), they should be informed about possible barriers they might encounter (in their specific sociocultural context) and strategies to overcome those barriers to implement their decisions (EngenderHealth 2018).

Finally, similar to the results of previous studies (Dev et al. 2019; Moore et al. 2015), the data showed that adolescent mothers used short-term modern contraceptive methods more frequently than long-term contraceptive methods (such as IUDs). In line with previous findings, the present study demonstrated that after counselling, the demand for IUD uptake increased among the participants that can be related to an improvement in the knowledge of the participants (Whitaker et al. 2013).

However, after a woman chooses to use an IUD (as an available long-term contraceptive method), the implementation of this decision partly depends on structural factors such as the skills of the staff in the insertion of IUDs (Bitzer et al. 2016; Ontiri et al. 2019). Therefore, the higher percentage of IUD uptake in the intervention group may be partly explained by the improvement of IUD knowledge and the fact that staff with adequate skills in IUD insertion provide IUD services in place.

It should be mentioned that in the intervention group, six participants changed their decision to use IUDs. According to the evidence, it was indicated that the participants' lack of decision-making power and the husband or family opposition to IUD use were among the factors hindering the participants to implement their initial decisions (Iyeng and Lyengar 2000).

Strengths and Limitations

The findings of the study need to be interpreted with caution owing to some limitations. Firstly, sampling in only one city with a special sociocultural context could undermine the generalisability of the results and emphasise the importance of performing further studies on the issue. Secondly, time constraints did not allow considering long-term outcomes, such as birth spacing among adolescent mothers. Nonetheless, the inclusion of adolescent mothers from all urban health centres and rural areas provided important evidence about adolescent contraceptive behaviours and pregnancy frequency in a disadvantaged area that can be valuable to local managers and policymakers.

Conclusion

The results of the study showed that counselling for family planning (using the REDI framework) four to six months after childbirth and time for switching to a modern contraceptive method can significantly improve adolescent mothers' use of modern contraceptive methods in an underprivileged population. Therefore, it is suggested to train providers in counselling skills based on the REDI framework to strengthen counselling for contraception and use of modern contraceptive methods among adolescent mothers. In addition, although training service providers in family planning counselling skills based on the REDI framework can increase the choice of IUDs among adolescent mothers, healthcare providers' lack of adequate technical skills in the insertion of IUDs can be a key barrier to IUD uptake.

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