An Investigation into Long-acting Reversible Contraception: Use, Awareness, and Associated Factors

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ARTICLE INFO	ABSTRACT
	Objectives: We aimed to investigate the prevalence, awareness, perceived reliability, and factors associated with the use of long-acting reversible contraception among reproductive-aged, married women and men in Iran. **Methods**: In this cross-sectional study, 1520 men and women between 15-49 years of age who attended public health centers in Tehran were surveyed. **Results**: About 85% of the respondents reported that they were already familiar with intrauterine contraception and 61.9% with Medroxyprogesterone Acetate. The majority of women respondents had not considered IUDs (57.2%) or DMPA (59.1%) as reliable methods. As for men, IUDs (53.8%) or DMPA (39.8%) were considered as reliable methods of contraception. Moreover, a higher number of women thought it was better to refrain from using IUDs (60.3%) or DMPA (61.5%) than men [IUDs (53.4%) or DMPA (40.2%)]. Those who in the younger age group (18-40 years old), had younger partners (18-40 years old), had education beyond a high school diploma and had no history of unwanted pregnancy (58%) were less likely to use LARC. **Conclusions:** Men and women are familiar with LARC (Long-acting reversible contraception) methods, but few believe that these methods are reliable. Demonstration of the performance of long-term methods by health personnel will increase the belief and trust of women and men in longer-lasting ways of contraception. **Keywords:** long-acting reversible, contraception, use, awareness, associated factors

INTRODUCTION

Contraception is widely used in Iran, with a prevalence rate of 81.5% (Motlaq et al., 2013; Simbar, 2010). The most common types of contraception include modern methods (oral contraceptive methods, long-acting methods, condoms, tubectomy, and vasectomy), used by 59.2% of contraception users, and traditional methods such as withdrawal and safe interval, used by 22.3% of users (Moosazadeh et al., 2014; Motlaq et al., 2013).

Unwanted pregnancy is a global public health issue that leads to serious health, economic, and social consequences for women and their families (Brown & Eisenberg, 1995), both worldwide and across the large and diverse Asia-Pacific region. This region is of particular interest since the rate of unwanted pregnancy is high (about 44%) (Sedgh et al., 2014).

The rate of unwanted pregnancy in Iran varies to a great extent, from 10.5% in Semnan to 49.3% in Rasht 2016 (Motlaq et al., 2013; Namazi, 2015; Zaheri et al., 2015).

Long-acting reversible contraception (LARC) methods include etonogestrel contraceptive implants, copper intrauterine devices (IUDs) and levonorgestrel-releasing intrauterine systems (DMPA). Over the past four decades, modern LARC methods have been available in Iran (Jalal Abbasi-Shavazi & McDonald, 2006; Mehryar et al., 2001; Simbar, 2012). However, only 10.6% of women aged 15-49 use an IUD and only 2.8% use DMPA (Motlaq et al., 2013; Simbar, 2010). According to the World Health Organization's (WHO) medical eligibility criteria for contraceptive use (Curtis, 2010), LARC does not show obvious contraindications. Furthermore, almost all women are eligible for using implants and intrauterine contraception (Group, 2009). LARC also has some advantages over other contraceptive methods, some of which include high effectiveness and worriless coitus. Therefore,

users will not require motivation and adherence are guaranteed at every sexual encounter. Moreover, LARC is reversible and does not require frequent visits for resupply (Committee, 2009). Compared with other contraceptive methods, LARC has higher rates of continuation and satisfaction (Likis, 2014; Peipert et al., 2011). According to reports, LARC was not widely used in Iran in 2012 (IUD =10.5%, DMPA=2.5%) when compared with other high-income countries such as the UK and the USA. It is estimated that about 8% of women of reproductive age in the UK and 10% in the USA use LARC (Eeckhaut et al., 2014). The increased use of LARC can reduce unwanted pregnancy and induced abortion (Committee, 2009; Holton et al., 2016).

The total fertility rate (TFR) in Iran dropped from 6.5 in 1960 to 1.6 in 2012, which is well below the targeted value of 2.2. Therefore, the WHO presented the World's Leading Birth Control Country Award to Iran in 2001. However, this award led to unexpected ramifications because families became reluctant to have children and people showed a high willingness to get married at older ages. These reasons factor into why the TFR decreased to a great extent, lower than intended by earlier policymakers. There is an urgent need to pay attention to this figure, as the TFR will fall below the replacement level if it continues to drop. This brought new challenges, some of which include an increased dependency ratio, and problematic economic and social concerns. Additionally, the policy change led to other concerns, such as limitations on the distribution of contraceptive methods; a lack of education in health clinics about what contraceptive methods should or should not be used, and on how to use permitted contraceptive methods; and the removal of vasectomy and tubectomy methods from the list of permissible contraceptive methods (Erfani, 2013). Given the lack of training on contraception methods in Iranian public health centers, as well as the overuse or underuse of contraception and its impact on society, it is important to research in this field to raise awareness and identify the perceived reliability of long-term methods in men and women of reproductive age.

This research thus aims to assess the prevalence, awareness, perceived reliability, and factors associated with the use of LARC among reproductive-aged, married women and men aged 15-49.

MATERIALS AND METHODS

Study Design

The current study has a cross-sectional design. The Ethics Committee approved this study of Mazandaran and Tehran Medical Sciences (IR.MAZUM.REC.96.3019).

Sample and Recruitment

The recruited sample consisted of married women and men of reproductive age (15-49 years old), living in the southern part of Tehran. Subjects were referred to the health centers to receive health care services. All the participants signed a written consent form. The exclusion criteria included being a bachelor, widowed, divorced, or unable to respond to the questions of the survey due to a lack of proper verbal communication in the Persian language.

Sampling Method

A stratified random sampling method was utilized *by* Mojgan Zendehdel, who randomly selected 62 out of 110 health centers in the southern part of Tehran. Participants referring to these centers were selected by using convenient sampling.

Calculating the Sample Size

According to the census received from the Planning and Management Organization of Tehran, men and women aged 15-49 constituted a population of 898,577 people in 2016. The sample size was calculated based on a recent study, according to which the prevalence rate of unwanted pregnancies was 30% (Motlaq et al., 2013). Overall, 1013 women and 507 men participated in this study. In addition, the questionnaire was completed for all of the participants, and no samples were excluded.

$$n = \frac{p(1-p)Z\frac{\alpha}{2}}{d^2} \qquad (1)$$

Where

$$
\begin{aligned}
p &= 30\% \\
d &= 5\% \\
Z\frac{\alpha}{2} &= 1.96
\end{aligned}
\qquad (2)
$$

Substituting (2) into (1) results in:

$$n = \frac{3.84 * 0.3 * 0.7}{(0.05)^2} = 336 \qquad (3)$$

336 (18 - 25) women	336 (18 - 25) men
336 (26 - 40) women	336 (26 - 40) men
336 (41- 49) women	336 (40 - 49) men
336*3=1008 sample women	
336*3=1008 sample men	

However, the number of married men aged (15 - 25) was very low because of the increased marriage age. Moreover, the numbers of men were referred to health centers were substantially smaller than women, which resulted in the smaller men samples. As a matter of fact, we considered 507 men and 1013 women samples in our study (in overall =507+1013=1520).

Data Collection

The inquiry began in January 2017 and ended in October 2017. The researcher randomly selected married women and men who were 15-49 years old. They were visiting the health centers in order to receive services, such as family planning, pregnancy care, monitoring of children's health, middle-age care (from 30 to 59 years old), dentistry, occupational health services, nutrition, etc. Having completed the informed written consent, the questionnaire was completed by the participants in a completely private environment. The time required to complete each questionnaire was 25 to 35 minutes.

Research Tools

The questionnaire consisted of several sections as follows:

10 questions were related to demographic information, such as age of the participant and her/his spouse, sex, the education level of the participant and her/his spouse (0 = diploma and less, 1 = diploma and beyond), employment (0 = no, 1= yes), number of times married (0 = once, 1 = more than once), satisfaction with health status (0 = poor, 1 = good), financial status (0= bad 1= good,), religion (0= Shia Islam,1= Sunni Islam), and participants' perception of the importance of religion in fertility choices (0 = not important, 1 = important).

One question was included for fertility knowledge (0 = poor, 1 = good). 6 questions were related to the awareness of the LARC methods: "Are you familiar with IUDs?", "Are IUDs reliable?", "Have/would you consider(ed) using IUDs?", "Are you familiar with DMPA?", "Is DMPA reliable?" and" Have/would you consider(ed) using DMPA?"

Use of other preventive methods was addressed using six questions: use of current contraception (0= no, 1= yes), having consulted with health professionals for contraception over the past two years (0= no, 1= yes), talking comfortably with health care providers about contraception (0=not comfortable, 1=comfortable), thinking about the participant's life right now, how important is it to you/your spouse to avoid pregnancy (0=not important, 1=very important), and the convenience of talking to the spouse regarding the use and selection of the contraceptive method (0=uncomfortable, 1=comfortable).

The record of pregnancy history was also gathered using three questions: a history of pregnancy (0=no, 1=yes), history of unwanted pregnancy (0=none, 1=at least once) and history of abortion (0= never, 1=at least once).

Long-acting Reversible Contraception

Two types of LARC methods are available in Iran: intrauterine contraception (both copper and hormonal) and contraceptive injections. The contraceptive implant is not available in Iran. The present study evaluated the participants' awareness of, attitudes towards, and use of intrauterine contraception and contraceptive injections.

The two types of LARC were addressed with three main questions: "Have you ever heard anything about this method?", "Do you think this method is reliable?", and "Would you consider using this method? The participants were supposed to answer the questions by the following options: 'Yes', 'No', or 'I don't know'. In order to analyze the first question (awareness of LARC), the options were classified as either 'Yes' or 'No and I don't know'. Few participants answered, 'I don't know'. In order to analyze the perceived reliability, all three options were included. The same questions were posed both for women and men.

Data Management and Analysis

All participants who completed the questionnaires were included in the analysis. Quantitative data were analyzed using IBM SPSS Statistics 22. Descriptive statistics were used to summarize the data.

The researchers aimed to investigate the associations between the characteristics of respondents and the perceived reliability and use of LARC. Accordingly, X^2 tests were conducted in order to investigate the associations between the characteristics of respondents and the perceived reliability and use of both types of LARC (intrauterine and DMPA).

The outcome variables were divided into three categories (Yes, No, I don't know). These characteristics were investigated by multinomial logistic regression analyses, which estimated odds ratios for the relationship between individual characteristics and the use and perceived reliability of LARC. We aimed to determine significant differences between the use of LARC and perceived reliability, using the characteristics of respondents. The option 'Yes' was regarded as the reference category.

For each sex (women and men), four multinomial logistic regression analyses were conducted: (1) perceived reliability of IUDs (dependent variable) using the characteristics of respondents (independent variables); (2) perceived reliability of DMPA (dependent variable) using the characteristics of respondents (independent variables); (3) the use of IUDs (dependent variable) using the characteristics of respondents (independent variables); and (4) the use of DMPA (dependent variable) using the characteristics of respondents (independent variables).

RESULTS

Sample and Response

Of the 3857 patients referred to the health centers, 1520 married men and women were enrolled in the study and gave their responses using a questionnaire during face-to-face interviews.

Awareness and Use of LARC

Most of the participants were familiar with IUDs (84.9%) and DMPA (61.9 %). However, more than half of the participants (56.1%) reported that the IUD or DMPA methods (52.6%) were not reliable and that they would not consider using them (58% and 54.4%, respectively). Women were much more familiar with IUDs (92.1%) compared to men (70.6%, p = 0.001) and DMPA (Women: 74%, men: 37.7%; p = 0.001). Furthermore, women were more likely than men to regard IUDs (women 34.5%, men 20.7%; x^2 (n =1520) 29.9, p = 0.001) or DMPA (women 15.4%, men 5.7%; x^2 (n = 1520) 12.2, p = 0.001) as reliable. Women were also more likely than men to consider using an intrauterine method (women 32.8%, men 20.7%; x^2 (n = 1520) 28.7, p = 0.001) as a contraceptive method. However, a similar proportion of women and men would consider the use of DMPA (women 13.4%, men 4.9%; x^2 (n = 1520) 10.7, p = 0.001).

When the respondents were asked to give their opinion on the use of LARC, 98 (6.4%) of them stated that they (or their partner) were currently using an intrauterine method, while 22 (1.4%) respondents stated that they (or their partner) were currently using DMPA. Additionally, 404 (26.6%) respondents reported that they had used intrauterine contraception. Finally, 98 (6.4%) respondents declared that they were already familiar with DMPA.

Table 1. Sociodemographic and reproductive history characteristics of women and men attending health clinics in the South East of Tehran, Iran (n =1520)

Variables	Women Frequency Mean+/-SD	Women Percentage Mean+/-SD	Men Frequency Mean+/-SD	Men Percentage Mean+/-SD	Total
Total	1013	66.6	507	33.4	1520
Age	Mean+/-SD	Mean+/-SD	Mean+/-SD	Mean+/-SD	
Years	32.4±7.3		36.5±6.1		33.7±7.1
Range	16-49		23-49		16-49
Age	Frequency	Percentage	Frequency	Percentage	
15-25y	117	95.7	8	4.3	185
26-40y	696	65.5	366	34.5	1062
>40y	140	51.3	133	48.7	273
Education					
Diploma and below	847	62.2	414	32.8	1261
Beyond diploma	166	64.1	93	35.9	259
Employed					
No	946	99.7	3	0.3	949
Yes	67	11.7	504	88.3	571
marriage					
Once	984	67.6	471	32.4	1455
More than once	29	44.6	36	55.4	65
Partner 's age category					
18-25y	34	29.8	80	70.2	114
26-40y	667	63.2	388	36.8	1055
>40y	312	88.9	39	11.1	351
Partner's education					
Diploma and below	822	69.1	368	30.9	1190
Beyond diploma	191	57.9	139	42.1	330
Religion					
Shia Islam	949	66.1	487	33.9	1436
Sunni Islam	64	76.2	20	2.8	84
Important of religion in fertility					
Unimportant	243	69.6	106	30.4	349
Important	770	65.8	401	34.2	1171
Satisfaction with finance status					
Poor	871	65.8	453	34.2	1324
good	142	72.4		27.6	196
satisfaction with general health status					
Not good	843	69	378	31	1221
Good	170	56.9	129	43.1	299
Fertility knowledge					
Poor	700	73.6	251	26.4	951
Good	29	74.4	10	25.6	39
History of pregnancy					
No	16	39	25	61	41
Yes	997	67.4	482	32.6	1479
History of unwanted pregnancy					
None	565	63.9	319	36.1	884
At least once	448	70.4	188	37.1	636
Current contraception use					
No	173	74.89	58	25.1	231
Yes	840	65.16	449	34.83	1289
Current contraception methods					
Withdrawal, natural method	352	65.2	188	34.8	540
Condom	238	57.1	179	42.9	417
Oral contraceptive pill	72	79.1	19	20.9	91
Contraception device IUD	98	78.4	27	21.6	125
Contraception injection DMPA	22	84.6	4	15.4	26
TL	45	4.4	22	4.3	67
VS	13	56.5	10	43.5	23
None of these conditions	173	74.9	58	25.1	231
Health consultation for contraception, pregnancy, or fertility over the past 2 years					
No	444	49	462	51	906
Yes	569	92.7	45	7.3	614
Comfortable asking health care providers about contraception matters					
Uncomfortable	233	47.5	258	52.5	491
Comfortable	780	75.8	249	24.2	1029
History of abortion					
No	918	66.3	466	33.7	1384
Yes	95	69.9	41	30.1	136
Importance of avoiding pregnancy					
Not at all important	10	37	17	63	27
Very important	1003	67.2	490	32.8	1493
Comfortable talking with partner about avoiding pregnancy					
Uncomfortable	127	76	40	24	167
Comfortable	886	65.5	467	34.5	1353
Comfortable asking about avoiding pregnancy					
Uncomfortable	129	75.9	41	24.1	170
Comfortable	884	65.5	466	34.5	1350

Table 2. Comparison of responses by women and men attending health clinics in South East Tehran, Iran (N=1520)

Variables	Women N=1013	Women Percentage	Men N=507	Men Percentage	Total	p-value
Heard of this method (IUD)						0.001
Yes	933	72.3	358	27.7	1291	
No	77	34.5	146	65.5	223	
I don't know	3	50	3	50	6	
Method (IUD) is reliable						0.001
Yes	349	76.9	105	23.1	454	
No	580	68	273	32	853	
I don't know	84	39.4	129	60.6	213	
Would consider using this method (IUD)						0.001
Yes	331	75.9	105	24.1	436	
No	611	69.3	271	30.7	882	
I don't know	71	35.1	131	64.9	202	
Heard of this method (DMPA)						0.001
Yes	750	79.7	191	20.3	941	
No	260	45.5	311	54.5	571	
I don't know	3	37.5	5	62.5	8	
Method (DMPA) is reliable						0.001
Yes	156	84.3	29	15.7	185	
No	599	74.8	202	25.2	801	
I don't know	258	48.3	276	51.7	534	
Would consider using this method (DMPA)						0.001
Yes	136	84.5	25	15.5	161	
No	623	75.3	204	24.7	827	
I don't know	254	47.7	278	52.3	532	

Factors Associated with the Perceived Reliability and Consideration of Long-acting Methods

Perceived reliability of IUD among women was found to be significantly associated with age (p =0.001), level of education (p=0.001), the age of their partner (p=0.001), religion (p=0.018), overall health satisfaction (p=0.035), history of pregnancy (p=0.001), unwanted pregnancy (p=0.001) and abortion (p=0.023), and current contraception use (p=0.003).

Associated factors with the reliability of IUDs in men were as follows: age of men (p=0.006), level of participant's education (p=0.004) and that of his spouse (p=0.001), history of unwanted pregnancy (p=0.003) and abortion (p=0.025), consulting with health professionals (p=0.034), and current contraception use (p=0.015) (**Table 3**).

The perceived reliability of DMPA among women was significantly associated with education (p=0.003), partner's education (p=0.053), religion (p=0.055), financial satisfaction (p=0.001), overall health satisfaction (p=0.001), history of unwanted pregnancy (p=0.008) and current contraception use (p=0.003). Meanwhile, the perceived unreliability of DMPA among men was only associated with multiple marriages (p=0.003) (**Table 3**).

Willingness to consider using IUD by women was significantly associated with the following variables: age (p=0.001), education (p=0.001), the age of their partner (p=0.001), partner's education (p=0.001), history of pregnancy (p=0.001), unwanted pregnancy (p=0.001) and current contraception method (p=0.010). Meanwhile, the use of IUDs in men was only associated with age (p=0.001), level of education (p=0.001), partner's education (p=0.001), history of pregnancy (p=0.001), history of unwanted pregnancy (p=0.034), consulting with health professionals (p=0.013) and current contraception method (p=0.023) (**Table 4**).

Willingness to consider using DMPA by women was significantly associated with the following variables: level of

Table 3. Univariable associations with respondent characteristics and perception of IUDs as reliable (n =1520)

Characteristics	Consider IUDs reliable (%)				
WOMEN	Yes	No	I don't know	χ^2	p-value
Age (N=1013)				42.68	0.001
15-25y (n=177)	17.5	68.9	13.6		
26-40y (n= 696)	35.6	57.2	7.2		
>40y (n= 140)	50	42.9	7.1		
Education (N=1013)				10.23	0.001
Diploma and below (n=847)	36.5	55.3	8.3		
beyond diploma (n=166)	24.1	67.5	8.4		
Partner's age (N=1013)				64.98	0.001
18-25y (n=34)	14.7	73.5	11.8		
26-40y (n=667)	27.1	64	8.8		
>40y (n=312)	52.2	41	6.7		
Religion (N=1013)				7.98	0.018
Shia Islam (n=949)	33.4	58.4	8.2		
Sunni Islam (n=67)	50	40.6	9.4		
Satisfaction with general health status(N=1013)				6.83	0.035
Not good (n=843)	36.1	56.2	7.7		
Good (n=170)	26.5	62.4	11.2		
History of pregnancy(N=1013)				31.52	0.001
No (n=13)	0	43.8	56.3		
Yes (n=997)	35	57.5	7.5		
History of unwanted pregnancy (N=1013)				30.91	0.001
None (n=565)	27.1	63.4	9.6		
At least once (n=448)	43.6	49.6	6.7		
Current contraception use(N=1013)				11.35	0.003
No (n=173)	29.5	55.5	15		
Yes (n=840)	35.5	57.6	6.9		
Had a consult with health professionals for contraception, pregnancy or fertility over the past 2 years (N=1013)				5.42	0.067
No (n=444)	33.6	55.9	10.69		
Yes (n= 569)	35.1	58.3	6.59		
History of abortion (N=1013)				7.80	0.023
No (n= 839)	33.1	58.3	8.6		
Yes (n=95)	47.4	47.4	5.3		
MEN					
Age (N=507)				14.60	0.006
15-25y (n=8)	12.5	62.5	25		
26-40y (n=366)	16.7	55.7	27.6		
>40y (n=133)	32.3	48.1	19.5		
Education (N=507)				11.19	0.004
Diploma and below (n=414)	22.7	50.5	26.8		
Beyond diploma (n=94)	11.8	68.8	19.4		
Partner's age (N=507)				8.29	0.082
18-25y (n= 80)	11.3	55	33.8		
26-40y (n=388)	21.9	54.4	23.7		
>40y (n=39)	28.3	46.2	25.6		
Partner's education(N=507)				16.06	0.001
Diploma and below (n=368)	23.9	48.6	27.4		
Beyond Diploma (n=139)	12.2	67.6	20.1		
History of unwanted pregnancy (N=507)				11.39	0.003
None (n=322)	16.3	55.2	28.5		
At least once (n=185)	28.2	51.6	20.2		
Had a consult with health professionals for contraception, pregnancy or fertility over the past 2 years (N=507)				6.77	0.034
No (n=462)	21.9	35.9	24.2		
Yes (n=45)	8.9	53.3	37.8		
History of abortion (N=507)				7.35	0.025
No (n=458)	20	53.2	28.8		
Yes (n=49)	29.3	61	9.8		
Current contraception use (N=507)				8.35	0.015
No (n=58)	13.8	44.8	41.4		
Yes (n=449)	21.6	55	23.4		

All data are presented as row percent.
P-values are based on c2 test for comparison of categorical variables between consider intrauterine contraception reliable and do not consider intrauterine contraception reliable

education (p=0.001), the age of their partner (p=0.033), their partner's education (p=0.003), religion (p=0.034), history of pregnancy (p=0.007), history of unwanted pregnancy (p=0.001), level of comfort talking to a health care provider about contraception (p=0.009), and current contraception method (p=0.003) (**Table 5**). The male participants regarded marriage (p=0.011) and the current contraception method (p=0.041) as important factors that influenced fertility choices.

Table 4. Univariable associations with respondent characteristics and perception of DMPA as reliable (n =1520)

Characteristics	Consider DMPA reliable (%)				
WOMEN	Yes	No	I don't know	χ^2	p-value
Education (N=1013)				11.45	0.003
Diploma and below (n=847)	16.9	57.4	25.7		
beyond diploma (n=166)	7.8	68.1	24.1		
Partner's age (N=1013)				4.74	0.315
18-25y (n= 34)	14.7	64.7	20.6		
26-40y (n=667)	14.2	58.5	27.3		
>40y (n=312)	17.9	59.5	22.1		
Partner's education (N=1013)				5.87	0.053
Diploma and below (n=822)	16.7	58.3	25.1		
Beyond diploma (n=191)	9.9	62.8	27.2		
Religion (N=1013)				5.79	0.055
Shia Islam (n=949)	14.6	59.5	25.8		
Sunni Islam (n=64)	26.6	53.1	20.3		
Satisfaction with finance status (N=1013)				306.80	0.001
Poor (n= 871)	15.3	59.6	25.1		
Good (n=142)	16.2	56.3	27.5		
Satisfaction with general health status (N=1013)				24.60	0.001
Not Good (n=843)	15.8	59.1	24.9		
good (n=170)	13.5	58.2	25.5		
History of unwanted pregnancy (N=1013)				9.64	0.008
None (n=565)	12.4	60.2	27.4		
At least once (n=448)	19.2	57.8	23		
Current contraception use (N=1013)				11.422	0.003
No (n=173)	16.2	48.6	35.3		
Yes (n=840)	15.2	61.3	23.5		
MEN					
Marriage (N=507)				11.39	0.003
Once (n=471)	5.9	37.8	36.3		
More than once (n=36)	2.8	66.7	30.6		

All data are presented as row percent.
P-values are based on c2 test for comparison of categorical variables between consider DMPA reliable and do not consider DMPA reliable

Women who did not consider IUDs to be a reliable method were more likely to avoid contraception and to have never been pregnant. Additionally, they were Shia Muslims, had just married once, and their partners were 18-40 years old.

Additionally, women who did not have enough information about IUDs reliability (women who answered "I don't know" in the questionnaire) did not undergo any contraception, and the age of their partners varied from 26-40 years old. Those women had not consulted with health professionals about contraception over the past two years. Additionally, men's partners did not have any history of unwanted pregnancy or contraception, and their education level was 'Diploma or below.'

Women who did not consider DMPA a reliable method did not have any history of unwanted pregnancy and their education level was 'Diploma or below'.

Moreover, women who did not have enough information about DMPAs reliability (women who answered "I don't know" in the questionnaire) did not have any history of unwanted pregnancy, and they were all Shia Muslims.

Women who were more likely not to consider the use of IUDs had no history of any pregnancy, and their education level was 'Diploma or below'. The age of their partners was between 18-25 years old. In addition, they were not using contraception at the moment. Men who responded that they would not consider using IUDs reported that their partners did not have any history of pregnancy and the age of their partners varied from 26-40 years old. Their education level was 'Diploma or below'.

Women who did not have any history of unwanted pregnancy and the age of their partners varied from 26-40

Table 5. Univariable associations between respondent characteristics and consideration of use of IUDs (n=1520)

Characteristics	Consider using IUDs (%)				
WOMEN	Yes	No	I don't know	χ^2	p-value
Age (N=1013)				41.73	0.001
15-25y (n=177)	16.9	72.9	10.2		
26-40y (n=696)	33.2	60.5	6.3		
>40y (n=140)	50	43.6	6.4		
Education (N=1013)				31.79	0.001
Diploma and below (n=846)	35.9	56.7	7.4		
Beyond diploma (n= 166)	16.3	78.9	4.8		
Partner's age (N=1013)				65.98	0.001
18-25y (n=34)	14.7	70.6	14.7		
26-40y (n= 667)	25.3	67.5	7.2		
>40y (n=312)	50.3	43.9	5.8		
Partner's education (N=1013)				15.63	0.001
Diploma and below (n=822)	34.7	57.5	7.8		
Beyond diploma (n=191)	24.1	72.3	3.7		
History of pregnancy (N=1013)				15.65	0.001
No (n=16)	0	62.5	37.5		
Yes (n=997)	33.2	60.3	6.5		
History of unwanted pregnancy (N=1013)				21.30	0.001
None (n=665)	25.1	66.2	8.7		
At least once (n=448)	42.2	52.9	4.9		
Current contraception use (N=1013)				9.13	0.010
No (n=173)	29.5	57.8	12.7		
Yes (n=840)	33.5	60.7	5.8		
MEN					
Age (N=507)				14.26	0.006
15-25y (n=8)	25	50	25		
26-40y (n=366)	16.4	56.3	27.3		
>40y (n=133)	32.2	45.9	21.8		
Education (N=507)				13.07	0.001
Diploma and below (n=414)	22.7	49.8	27.5		
Beyond diploma (n=93)	11.8	68.9	18.3		
Partner's age (N=507)				6.72	0.156
18-25y (n=80)	12.5	55	32.5		
26-40y (n=388)	21.6	54.1	24.2		
>40y (n=39)	28.2	43.6	28.2		
Partner's education (N=507)				19.90	0.001
Diploma and below (n=368)	24.7	48.1	27.2		
Beyond diploma (n=139)	10.1	67.6	22.3		
History of pregnancy (N=507)				13.44	0.001
No (n=25)	0	56	44		
Yes (n=482)	21.8	53.3	24.9		
History of unwanted pregnancy (N=507)				6.96	0.034
None (n=319)	17.2	54.5	28.2		
At least once (n=188)	26.6	51.6	21.8		
Had a consult with health professionals for contraception, pregnancy or fertility over the past 2 years (N=507)				8.74	0.013
No (n=462)	21.9	53.9	24.2		
Yes (n=45)	8.9	48.9	42.2		
Current contraception use (N=507)				7.62	0.023
No (n=58)	17.2	41.4	41.4		
Yes (n=449)	21.2	55	23.8		

All data are presented as row percent.
P-values are based on c2 test for comparison of categorical variables between would consider use of intrauterine contraception and would not consider use of intrauterine contraception

years old reported that they had no information about using IUDs (They answered "I don't know in the questionnaire).

Women who did not consider using DMPA had not used any contraception at the time when they were filling out the questionnaire; their ages were between 26-40 years old.

Women who did not have enough information about using DMPA (They answered "I don't know in the questionnaire) were not comfortable enough to ask their health care providers about contraception, compared to those who insisted on using DMPA.

Table 6. Univariable associations with respondent characteristics and consideration of use of DMPA (n =1520)

Characteristics	Consider using DMPA (%)				
WOMEN	Yes	No	I don't know	χ^2	p-value
Education (N=1013)				17.23	0.001
Diploma and below (n=847)	15.2	59	25.7		
Beyond diploma (n=166)	5.4	72.9	21.7		
Partner's age (N=1013)				10.62	0.033
18-25y (n=34)	5.9	76.5	17.6		
26-40y (n=599)	12	61.5	26.5		
>40y (n=312)	17.9	59.3	22.8		
Partner's education (N=1013)				11.81	0.003
Diploma and below (n=822)	15.2	59.5	25.3		
Beyond diploma (n=191)	6.8	69.1	24.)		
Religion (N=1013)				6.76	0.034
Shia Islam (n=949)	12.9	61.6	25.5		
Sunni Islam(n=64)	25	56.3	18.8		
Important of religion in fertility(N=1013)				5.26	0.072
Unimportant (n=243)	16.5	63.5	20.2		
Important (n=770)	12.7	60.6	26.6		
History of pregnancy(N=1013)				9.96	0.007
No (n=16)	0	43.8	56.2		
Yes (n=997)	13.8	61.6	24.6		
History of unwanted pregnancy(N=1013)				15.75	0.001
None (n=565)	9.9	62.8	27.3		
At least once (n=448)	18.3	59.4	22.3		
How comfortable are you asking your health care provider about contraception matters? (N=1013)				9.13	0.009
Uncomfortable (n=233)	17.6	63.9	18.5		
Comfortable (n=780)	12.4	60.5	27.1		
Current contraception use (N=1013)				11.67	0.003
No (n=173)	15	50.3	34.7		
Yes (n=840)	13.3	63.6	23.1		
MEN					
Marriage (N=507)				8.82	0.011
Once (n=471)	5.1	38.4	56.5		
More than once (n=36)	2.8	63.9	33.3		
Current contraception use (N=507)				6.43	0.041
No (n=58)	0	39.7	60.3		
Yes (n=449)	5.6	40.3	54.1		

All data are presented as row percent.

P-values are based on c2 test for comparison of categorical variables between would consider use of DMP and would not consider use of DMPA

Table 7. Adjusted model of factors associated with perception of LARC as reliable

Independent variable	p-value	Adjusted odds ratio	95% CI
IUD Women (N=1013)			
IUD Reliable = NO			
Religion (Shia Islam)	0.001	2.69	1.51-4.79
History of unwanted pregnancy (NO)	0.001	1.64	1.23-2.19
Partner's age 18-25y	0.006	4.69	1.57-13.97
Partner's age 26-40y	0.001	2.62	1.82-3.77
IUD Reliable = I don't know			
Current contraception use (NO)	0.001	2.59	1.46-4.62
Partner 's age category (26-40y)	0.03	2.14	1.05-4.37
History of unwanted pregnancy (NO)	0.04	1.72	1.02-2.88
Had a consult with health professionals for contraception, pregnancy or fertility over the past 2 years (No)	0.002	2.29	1.37-3.83
IUD Men (N=507)			
IUD Reliable = No			
History of unwanted pregnancy (NO)	0.01	1.85	1.12-3.05
Age(26-40Y)	0.03	1.81	1.03-3.17
Education (Diploma and below)	0.02	0.44	0.22-0.89
IUD Reliable = I don't know			
History of unwanted pregnancy (NO)	0.01	2.08	1.16-3.73
Current contraception use (NO)	0.04	2.43	1.19-4.96
Education (Beyond diploma)	0.03	1.81	1.04-3.17
DMPA Women (n=1013)			
DMPA Reliable = NO			
History of unwanted pregnancy (NO)	0.02	1.54	1.07-2.24
Education (Beyond diploma)	0.07	0.43	0.23-0.79
DMPA Reliable = I don't know			
History of unwanted pregnancy (NO)	0.02	1.62	1.07-2.47
Religion (Shia Islam)	0.03	2.25	1.05-4.87

Reference category is 'Yes'.

Table 8. Adjusted model of factors associated with consideration of use of LARC

Independent variable	p-value	Adjusted odds ratio	95% CI
IUD Women (n=1013)			
Would/have consider(ed) IUD = NO			
History of unwanted pregnancy (NO)	0.03	1.45	1.02-2.04
Education (Beyond diploma)	0.001	0.37	0.2 -0.66
Age (18-25y)	0.03	2.46	1.09-5.57
Partner's age (26-40y)	0.001	3.15	2.09 -4.73
Would/have consider(ed) IUD =I don't know			
History of unwanted pregnancy (NO)	0.01	2.08	1.13-3.83
Current contraception use (NO)	0.04	1.89	1.01-3.54
Partner's age (26-40y)	0.01	2.81	1.28-6.17
IUD Men (n=507)			
Would/have consider(ed) IUD = NO			
Age (26-40y)	0.01	1.86	1.25-3.07
Partner's education (Beyond diploma)	0.01	0.41	0.21-0.82
Would/have consider(ed) IUD =I don't know			
Age (26-40y)	0.02	1.97	1.09-3.54
DMPA Women (n=1013)			
Would/have consider(ed) DMPA = NO			
History of unwanted pregnancy (No)	0.006	1.74	1.17-2.57
Religion (Shia Islam)	0.03	1.97	1.03-3.75
Education (Beyond diploma)	0.003	0.34	0.17-0.70
Would/have consider(ed) DMPA =I don't know			
History of unwanted pregnancy (NO)	0.007	1.83	1.18-2.84
Religion (Shia Islam)	0.01	2.79	1.24-6.25

Reference category is 'Yes'.

Table 9. Summary of factors associated with LARC's perceived reliability and consideration of use

Factors	IUD Perceived to be reliable	IUD Would consider use	DMPA Perceived to be reliable	DMPA Would consider use
Religion (Shia Islam)	W		W	W
Partner's age (18-25y)	W			
Partner's age category (26-40y)	W/M	W		
Current contraception use (NO)	W/M	W		
Had consulted with health professionals about contraception (NO)	W			
History of unwanted pregnancy (NO)	W/M	W	W	W
Age (18-25y)		W		
Age (26-40y)	M	M		
Education (Beyond diploma)		W	W	W
Partner's Education (Beyond diploma)		M		

W, women; M, me

DISCUSSION

The present study aimed to investigate a large sample size, which included the entire southern part and suburbs of Tehran, covering a population of over 1.5 million people with low socioeconomic status. Most of these areas suffered from high rates of unemployment, and inhabitants live in rented housing. These people are more likely to be at risk of unwanted pregnancy and need to pay more attention to their fertility status.

This research is the first of its kind, which aimed to investigate the perspectives of Iranian people about LARC. According to the findings, most Iranian men and women who are of reproductive age and are trying to avoid pregnancy are highly aware of LARC. However, LARC is not widely used among these couples.

LARC Awareness

In the present study, approximately 75% of the participants were already familiar with LARC. A study in the United States of 520 women aged 13-45 showed that a large number of

respondents were familiar with LARC. They also knew a great deal about LARC, and three-quarters (76%) had heard about LARC methods (Burns et al., 2015). However, another study carried out on female Hispanic adolescents aged 16 showed that only 50% of the participants had heard about LARC (Dobry et al., 2018).

In a cross-sectional convenience survey on English-speaking women who were referred to two sexual health clinics in Toronto, it was shown that 77% of the participants were already familiar with LARC (Buhling et al., 2014). Finally, a study conducted on 70% of a sample of Australian men and women aged 18-50 years old indicated that they had already been familiarized with LARC (17). All these studies are in agreement with the present study.

LARC Usage

Even though the participants were mostly aware of LARC, only 8.2% and 1.7% used IUDs and DMPA, respectively. According to a study carried out on 502 women aged 18-30 in the UK, in which they completed a cross-sectional online questionnaire, it was found that only 18% of the participants reported using LARC (Bracken & Graham, 2014).

The number of married women participants using LARC methods was generally higher in France (27%), Russia (32%), Austria (23%) and Germany (11%) than United States (10%) and Australia (7%) (16).

A descriptive cross-sectional study in Turkey investigated the use of IUDs in a total sample of 106,669 women aged 15-49 years old. It was found that 25% of the participants used IUDs (Çalikoğlu et al., 2018).

LARC Reliability

Our study showed that 30% of the participants believed that the use of IUDs was reliable, while only 12% stated that DMPA was reliable. In a survey carried out in Australia, 46% of the participants believed that IUD was reliable (17).

LARC as a Choice

Various factors influenced the decision of one method of LARC over the other. These variables include religion, several marriages, partner's age, having a current contraception method, not having consulted with health professionals about contraception, a history of unwanted pregnancy, age of the participant, and the education level of participant and his/her spouse.

In a study carried out on 3155 participants by Jacqueline Coombes et al., it was found that the history of pregnancy was strongly associated with the increased use of LARC in Australian women (Coombe et al., 2017). A study on the relationship between LARC and parity has also suggested that women who have had one or more children were more likely to use these methods (Cea Soriano et al., 2014). The National Survey of Family Growth conducted a study (2011) on 7,643 women aged 15-44 years old. It was found that women who had given birth once or twice were more likely to use LARC (Hoopes et al., 2018; Kavanaugh et al., 2011). Our study suggests that nulliparous and teenagers did not use LARC methods. Instead, they usually used short-acting methods such as pills, condoms and natural methods.

The type of religion is an essential factor which could influence the results of this study. Since long-acting methods can change the bleeding patterns of menstruation (amenorrhea (Azmat et al., 2012), hypomenorrhea and menometrorrhagia (Kaneshiro & Aeby, 2010), they may limit a woman's relationships and her ability to do domestic chores (Bateson et al., 2017). Intercourse during menstruation is considered forbidden in Islam (in both Shia and Sunni sects), and in some more conservative populations, it is reflected as a great sin (Soltani, 2005). In addition, some cultural and religious beliefs prevent menstruating women from participating in worship activities, including walking into a mosque or reading Quran (Salem & Setty, 2006). When a woman on menstruation is socially and religiously considered as a sexual, dirty, shameful, dangerous, and scary creature that is also unbalanced in terms of mood, mad and inconsistent in decision-making, she sees herself highly vulnerable in experiencing menstruation. When blood flows inside the body, it is clean and the sign of life, but once it exits the body, it is considered unclean, and the body gets dirty. The release of menstrual discharge is thought to be insanitary, and a woman who is not on her menstruation is regarded as sanitary and a healthy creature (Zendehdel & Elyasi, 2018). These reasons may lead to a reduction in the use of LARC. Our results showed that Shia women were more likely to make use of long-acting methods compared to Sunni women, which might be due to stricter religious rules in the Sunni sect.

Another critical finding which needs to be taken into consideration is the number of marriages. Women who were married more than once reported that long-acting methods were less favoured; this might be due to the desire to experience more stable families by having children. It has also been suggested that relationship status can influence the use of LARC. According to a study by Kavanaugh and Coombe, women who were in a cohabitating relationship or those who were engaged or married were more likely to use LARC than single women or women in non-cohabitating relationships (Kavanaugh et al., 2011; Salem & Setty, 2006).

Women with younger husbands (24-40 years old) did not use long-lasting methods. Given the fact that the marriage age has increased among Iranian men and women over the past number of years, couples have less time for safe pregnancies. For this reason, they do not use long-lasting methods to complete their family as soon as possible. This result was not obtained in similar studies.

According to the researchers' findings, men and women who did not use contraception during their sexual relationships did not tend to use long-lasting methods. Infertility and emotional distance or disease are among the main reasons why the couples avoided sexual relations and consequently avoided contraception, including long-term methods.

The results of this study showed that those participants who had not consulted with health professionals did not have enough information about LARC methods and chose this method less than other contraception methods. The findings of the present study agree well with those of Daniele et al., Nansseu et al., Santoso and Surya (Coombe et al., 2016; Daniele et al., 2017; Zendehdel & Elyasi, 2018).

According to the results of this study, men and women who had experienced unwanted pregnancy were referred to health centers to receive advice on safe prevention and consequently became familiar with long-term preventive measures. This is how the couples avoided further pregnancies. It was mentioned in one other article that the fact that LARC is highly effective could be attractive for women, particularly for those who want to avoid unwanted pregnancy (30).

The present study shows that age plays an essential role in choosing LARC over other contraceptive methods: older men and women regarded IUDs and DMPA as reliable methods. The findings of the present study agree well with other reviews in the USA and France (Hoopes et al., 2018; Nansseu et al., 2015; Santoso et al., 2017).

The level of education is another criterion that needs to be taken into account. Men and women who had at least a diploma or degrees beyond the diploma used LARC methods less than those with lower levels of education. In addition, Kavanaugh et al. and Goldstone et al. also showed that a higher level of education is associated with decreased use of LARC (Daniels et al., 2014; Kavanaugh et al., 2011). The reason why women with higher levels of schooling avoid fertility using contraception methods other than LARC can be attributed to the fact that they are fully aware of the methods of prevention and do not require long-term methods.

STRENGTHS AND WEAKNESSES OF THE STUDY

The advantage of the present study was the relatively large number of women and men recruited. This was the first study of its kind in Iran. It was also the first study in Iran in which men were asked about long-term prevention methods.

The present study provided male participants with an opportunity to obtain thorough information on the LARC methods and the benefits of long-term effects of LARC.

The cross-sectional nature of this study could be considered a limitation. The participants in this study were both Iranians and Afghans. Owing to their lower socioeconomic status and lack of access to facilities, Afghans are classified as a particular group. The number of Afghan participants (85 women and 14 men) was insufficient for a separate analysis. Therefore, this study cannot be generalized to the Iranian population. Nevertheless, the fact is that Afghan immigrants have set down roots in Tehran and are key users of health care services.

CONCLUSION

The present study showed that men and women are familiar with LARC methods, but few believe that these methods are reliable. Owing to the changes in the Iranian family planning policy since 2014 and the elimination of teaching methods for preventing health education programs, modern methods of contraception are not uniformly accepted. The Iranian family planning program needs to be supported by the authorities to strengthen the pillars of our Islamic society.

The newly-wed Iranian men and women who are ready to start a family should be given access to information about the importance of family, the proper timing of pregnancy, and suitable spacing between children. Strategically-timed details on the right time to use LARC can be crucial for family development objectives.

USE OF CLINICAL RESEARCH

Training on methods of preventing pregnancy needs to be incorporated in the educational programs of health centers, as well as other scientific and cultural centers. Training for men must also be a part of the curriculum. In all dissemination of information by clinicians about preventive methods, obtaining feedback from the client is recommended.

LIST OF ABBREVIATION

LARC   : long-acting reversible contraceptives
DMPA : Depo Medroxyprogesterone Acetate
TFR   : Total Fertility Rate
IUD   : Intrauterine Device
OR   : Adjusted Odd Ratios
CI   : Confidence Interval

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