

## Investigating Reproductive Life Plan in Pregnant Women Referred to Teaching Hospitals of Mashhad, Iran

### Abstract

**Background:** Reproductive Life Planning (RLP) is a person-centered approach that investigates the reproductive needs, values, and priorities of each person and not only reduces the risk of unwanted pregnancies but also improves pregnancy outcomes and childbirth by investigating the health behaviors and underlying diseases of each individual. Therefore, the present study was conducted to assess RLP in pregnant women. **Materials and Methods:** This descriptive cross-sectional study was carried out on 1019 pregnant women who were referred to outpatient clinics of teaching hospitals in Mashhad, Iran, during May–August 2019. The participants were selected using a convenience sampling method. The data collection tool used was a questionnaire. Data analysis was performed in SPSS software. **Results:** The results of this study showed that about two-thirds of the participants had a plan for their reproductive years. The age range of the participants was 13–47 years. Among the women, 38.60% had experienced failure of contraceptive method, and 32.20% had an unmet need for family planning. Moreover, only one-third of the women had been referred for preconception care, but 88.70% of the pregnant women had their initial prenatal care visit in their first trimester. **Conclusions:** Given the considerable number of unwanted pregnancies and unmet needs for family planning in the present study, the modification of family planning policies seems necessary. Various strategies have been proposed to prevent unintended pregnancies such as RLP. The long-term goals of RLP are to plan pregnancies and improve maternal and infant outcomes.

**Keywords:** Pregnant women, reproduction, reproductive behavior, reproductive health services

### Introduction

All people have the right to determine the path of their lives in the best way. Deciding when to have children and how many children to have are important parts of this right. The reproductive life plan is a structured opportunity for men, women, and couples of reproductive age to examine values and priorities of their reproduction in the field of having a child and the time of having child, and to state it to the care provider and to cooperate with the care provider to achieve this goal.<sup>[1]</sup> Surveys conducted in 2019 showed that there are 1 billion and 9 hundred million women of reproductive age in the world, 1 billion and 1 hundred million of whom need family planning services. Moreover, about 190 million women of reproductive age in the world have no desire for pregnancy but do not use any contraceptive methods. This amount was about 156 million women in 2000.<sup>[2]</sup> Despite many advances in the

technology of family planning methods, annually, 74 million women become pregnant unintentionally in low- and middle-income countries the outcome of which is 25 million abortions in unsafe conditions and 47,000 maternal deaths. The outcomes of unintended pregnancies include late diagnosis of pregnancy, initiation of prenatal care after the first trimester of pregnancy, and increased risk of adverse outcomes of pregnancy.<sup>[3]</sup> Today, preconception care is considered a primary health care service provided before or during the first pregnancy for health promotion, risk assessment, and provision of intervention and modification of risks threatening maternal and child health.

Despite the evidence linking preconception care to improved maternal and perinatal outcomes, preconception care remains fragmented and inconsistent because we are failing to intervene before pregnancy to improve women's health status and mitigate

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risk factors that can contribute to adverse maternal and fetal outcomes.<sup>[4]</sup>

Studies show that 25% of Iranian women have metabolic syndrome,<sup>[5]</sup> 18% of women more than 18 years of age are obese,<sup>[6]</sup> and 22% of urban pregnant women have iron deficiency anemia.<sup>[7]</sup> Furthermore, 9.20% of pregnancies lead to preterm labor.<sup>[8]</sup> These results indicate that focusing on preconception care alone will not be enough. Therefore, in order to improve women's health, it is necessary to improve the ways we provide health care throughout a woman's lifetime. In this regard, a reproductive life plan is created at the outset of a woman's reproductive life and updated at subsequent visits until she reaches the end of her childbearing years. This approach to care is seamless, differing from the traditional understanding of distinct preconception, interconception, and prenatal periods.<sup>[4]</sup> In a view presented by the Center for Disease Control and Prevention (2006) in the field of promoting preconception care, it has been stated that all men and women of reproductive age should have a plan for their reproductive life. All pregnancies should be planned. All men and women of reproductive age should be covered by health care. All women of reproductive age should be examined before pregnancy in terms of risk factors affecting pregnancy outcome, and all women who have had a complication in their previous pregnancies should receive preconception care. Reproductive planning is the first recommendation of this center for the promotion of preconception care.<sup>[9]</sup> This plan begins at the beginning of individuals' reproductive years and continues until the loss of their ability to reproduce.<sup>[10]</sup>

The reproductive life plan has several unique features. The first feature is that it is not only for women and covers both genders. The second feature is accountability, and every person must be responsible for his/her reproductive life. Third, the plan is an interaction opportunity between a health personnel and individual. Fourth, it is a plan regulated for the entire reproductive years of a person. The fifth feature is the flexibility of the plan; it changes according to one's living conditions. The sixth feature of this plan is that the reproductive life plan is individualized and distinctive and based on their living conditions.<sup>[11]</sup> In the reproductive life plan, the inclination toward pregnancy, the desirable number of children, the interval between births, and the appropriate time for childbirth will be examined. Consultation is also performed for the use of a contraceptive method or preconception care depending on the woman's desire for pregnancy or the lack thereof. A reproductive life plan is an initial contraceptive strategy that emphasizes the integration of primary health care with prenatal care in all aspects affecting individuals' health, including the controlling of social factors. This issue leads to the formation of a consistent and integrated approach to care and the comprehensive evaluation of health of women, not as a pregnant or nonpregnant person.<sup>[12]</sup> Reproductive

Life Planning (RLP) is used in contraceptive counseling for target groups (especially women with chronic diseases) in some countries, especially the United States, which has yielded valuable results such as increased knowledge among women.<sup>[13]</sup> RLP can be used in Iran to prevent unwanted pregnancies and the failure of contraception. According to reports, the overall prevalence of unwanted pregnancy among Iranian women was 26%.<sup>[14]</sup> In this regard, Iranian researchers have evaluated the reproductive behaviors of women from different views (utilization of contraceptive methods, and method failure and utilization of preconception care). Nevertheless, no previous study has systematically evaluated the RLP protocol in Iranian women and couples. Only one study in Iran has mentioned the reproductive life plan and its importance.<sup>[15]</sup> Thus, the present study was carried out to evaluate the use of RLP in women as a starting point for providing structured information about reproduction in contraceptive counseling.

## Materials and Methods

The present descriptive cross-sectional study was carried out on 1019 pregnant women selected from Persian-speaking pregnant women with Iranian nationality who had referred to outpatient clinics of teaching hospitals in Mashhad, Iran, to receive prenatal care. Data collection was carried out during May–August 2019. The participants were selected through convenience sampling method. The sample size was calculated as 968 subjects by the use of mean comparison formula (with 95% CI and power of 80%). With the possibility of 5% subject dropout during the study and to ensure the participation of an adequate number of subjects, the total number of subjects was calculated to be 1019.

The data were collected by means of a questionnaire. This instrument was a 25-item researcher-made questionnaire consisting of 10 questions on demographic characteristics (such as age, spouse' age, educational level, spouse's educational level, duration of the marriage, and employment status), 7 questions on reproductive history (such as pregnancies, childbirth, live births, stillbirths, abortions, and a number of children), 4 questions on the history of birth control (such as the use of contraceptives, kind of birth control methods, and contraceptive failure, and unwanted pregnancy), and 4 questions on preconception care (such as the sources of information, perception and utilization of preconception care, and the timing of the first prenatal care visit). In the present study, RLP was assessed by 4 items consisting of contraceptive use, contraceptive failure, uptake of preconception care, and first prenatal care visit up to 12 weeks. The items were yes/no questions with 0 point for "no" and 1 point for "yes." The content validity and reliability of the demographic and reproductive characteristics questionnaires were confirmed. The study instrument included clear terms, and it was prepared based

on similar studies and consultation with supervisors and advisors.

The study location was the outpatient clinic of teaching hospitals in Mashhad. In these clinics, care procedures are provided by specialists in different fields. In addition to diagnosing and treating patients' gynecological conditions, obstetricians and gynecologists also visit pregnant mothers. Therefore, pregnant women who want to receive care from a gynecologist refer to these clinics. In these clinics, specialist doctors are present during determined hours and work on weekdays other than holidays. After obtaining approval for the study from the ethics committee of Shahroud University of Medical Sciences, Iran, the researcher, who is the first author of the study, was present in outpatient morning clinics for 3 months, identified eligible mothers, and completed the questionnaires through interviews. At the end of sampling, statistical analysis was performed using the Chi-square test, Mann-Whitney U test, and logistic regression in SPSS software (version 16; SPSS Inc., Chicago, IL, USA). The significance level was considered to be  $\alpha = 0.05$  in all statistical tests.

**Ethical considerations**

This study is the result of a research project. It was approved with the code of ethics of IR.SHMU.REC.1397.51 on June 2, 2018 by the Joint Ethics Committee of the School of Nursing and Midwifery at Shahroud University of Medical Sciences. In order to conduct the study, the researcher explained the objectives of this study to all participants, and an informed written consent was obtained from them.

**Results**

In this study, the reproductive life plan of 1019 pregnant women (aged 13–47 years) who were referred to teaching hospitals of Mashhad was assessed. Some demographic characteristics about the reproductive age of women are presented in Table 1. As shown in this table, the mean (SD) age of the mothers studied was 28.15 (6.40) years, and a majority of mothers (81.60%) were within the age range of 18-35 years. In addition, 97% of the participants were housewives. Moreover, 73.10% of the women were living in cities and 26.90% in villages. In terms of education, about two-thirds of women had a middle school degree to high school diploma, and most of the spouses of the

participants were self-employed [Table 2]. The reproductive characteristics of the participants showed that 71.10% of women had a previous history of pregnancy, and 64.50% of them had given birth at least once. The number of children of the study participants was 1–7 children; 51.80% had 1–2 children, and 11.20% had 3–4 children. The results of the Chi-square test showed a statistically significant relationship between the history of pregnancy and childbirth and the use of contraceptives ( $p < 0.001$ ) [Table 2].

The assessment of RLP in this study showed that 6.80% of women scored 1 point, 39.80% of women scored 2 points, 46.70% of women scored 3 points, and only 6.70% of women scored 4 points. The results showed that 67.80% of the participants had used one type of contraceptive. Furthermore, 38.60% of the participants had experienced contraceptive method failure. Figure 1 shows the frequency of contraceptive use by the participants. In this regard, withdrawal was the most commonly used method in our sample (61.60%). Furthermore, 32.20% of the participants had an unmet need for family planning. Logistic regression analysis for correlates of socio-demographic characteristics of respondents with contraceptive use and contraceptive failure are presented in Table 3.

In terms of a planned pregnancy, only 33.50% of the respondents used preconception care. In addition, more than 3 out of 4 women (89%) initiated prenatal care in the first trimester of pregnancy, 8.60% of all women between weeks 12 and 20, less than 3% after week 20 (2.40%), and 0.30% of women received no prenatal care at all. The study of high-risk behaviors in pregnant women showed that

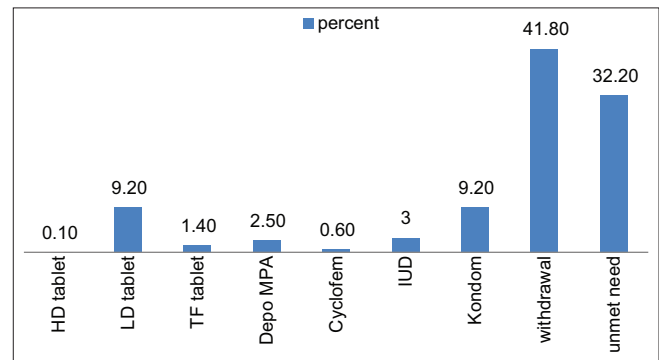


Figure 1: Percentage of contraceptive use by method

**Table 1: Socio-demographic characteristics of respondents, contraceptive use, and contraceptive failure**

Variable*	Contraception use				Contraception failure			
	Mean (SD)	No n (%)	Yes n (%)	p	Mean (SD)	No n (%)	Yes n (%)	p
Age of respondents	28.15 (6.4)	26.17 (6.85)	29.09 (5.96)	< 0.001	29.79 (6.09)	28.65 (5.84)	29.79 (6.09)	0.022
Husband's age	32.36 (6.47)	30.67 (7.02)	33.17 (6.03)	< 0.001	32.36 (6.47)	32.07 (5.61)	33.89 (6.57)	0.038
Duration of marriage	8.55 (5.60)	6.16 (5.28)	9.69 (5.39)	< 0.001	8.55 (5.60)	9.04 (5.05)	10.68 (5.78)	0.001
Number of children	1.13 (1.13)	0.49 (1.09)	1.43 (1.09)	< 0.001	1.13 (1.13)	1.21 (0.98)	1.79 (1.17)	< 0.001

\*The data do not follow a normal distribution (age of respondents, husband age, duration of marriage, and number of children)

**Table 2: Factors associated with contraception use and contraception failure among respondents**

Variable	Contraception use			<i>p</i>	Contraception failure		<i>p</i>
	<i>N</i> (%)	No <i>n</i> (%)	Yes <i>n</i> (%)		No <i>n</i> (%)	Yes <i>n</i> (%)	
Education level				0.617			0.531
Illiterate and primary education	270 (26.50)	90 (27.40)	180 (26.00)		109 (25.70)	70 (26.20)	
Lower Secondary Education diploma	614 (60.30)	192 (58.50)	422 (61.10)		255 (60.10)	167 (62.50)	
University education	135 (13.20)	46 (14.00)	89 (12.90)		60 (14.20)	30 (11.20)	
Husband's education level				0.428			0.123
Illiterate and primary education	338 (33.20)	113 (34.50)	225 (32.60)		127 (30.00)	98 (36.70)	
Lower Secondary Education diploma	363 (35.60)	113 (34.50)	250 (36.20)		164 (38.70)	86 (32.20)	
University education	318 (31.20)	102 (31.10)	216 (31.30)		133 (31.40)	83 (31.10)	
Women's occupation				0.432			0.265
Housewife	988 (97.00)	316 (96.30)	672 (97.30)		410 (96.70)	262 (98.10)	
Employee	31 (3.00)	12 (3.70)	19 (2.70)		14 (3.30)	5 (1.90)	
Husband's occupation				0.242			0.891
Laborer	357 (35.00)	115 (35.10)	242 (35.00)		145 (34.20)	96 (36.00)	
Self-employed	526 (51.60)	161 (49.10)	365 (52.80)		227 (53.20)	139 (52.10)	
Other	136 (13.30)	52 (15.90)	84 (12.20)		52 (12.30)	32 (12.00)	
Household income				0.283			0.343
Insufficient	644 (63.20)	215 (65.50)	429 (62.10)		258 (60.80)	172 (64.40)	
Desirable	375 (36.80)	113 (34.50)	262 (37.90)		166 (39.20)	95 (35.60)	
Housing status				0.835			0.561
Personal	334 (32.80)	104 (31.70)	230 (33.30)		146 (34.40)	83 (33.10)	
Rental	537 (52.70)	174 (53)	363 (52.50)		216 (50.90)	147 (55.10)	
Other	148 (14.50)	50 (15.20)	98 (14.20)		62 (14.60)	37 (13.90)	
Experienced pregnancy				< 0.001			< 0.001
Yes	724 (71.10)	139 (42.20)	585 (84.70)		342 (80.70)	242 (90.60)	
No	295 (28.90)	189 (57.60)	106 (15.30)		82 (19.30)	25 (9.40)	
Experienced abortion				< 0.001			0.282
Yes	247 (33.70)	71 (48.60)	176 (29.90)		109 (31.70)	67 (27.60)	
No	487 (66.30)	75 (51.40)	412 (70.10)		235 (68.30)	176 (72.40)	
Experienced childbirth				< 0.001			0.071
Yes	657 (64.50)	102 (72.90)	555 (95.20)		321 (93.90)	233 (97.10)	
No	66 (6.50)	38 (27.10)	28 (4.80)		21 (6.10)	7 (2.90)	
History of pregnancy-related complications				0.542			0.974
Yes	614 (60.30)	203 (61.90)	411 (59.50)		252 (59.40)	159 (59.60)	
No	405 (39.70)	125 (38.10)	280 (40.50)		172 (40.60)	108 (40.40)	
Have underlying diseases				0.031			0.445
Yes	264 (25.90)	99 (30.20)	165 (23.90)		109 (31.70)	67 (27.60)	
No	755 (74.10)	229 (69.80)	526 (76.10)		235 (68.30)	176 (72.40)	
Types of contraception				-			0.011
Hormonal	140 (2.30)	-	-		90 (21.20)	50 (18.80)	
Nonhormonal	125 (18.10)	-	-		89 (21)	36 (13.50)	
Withdrawal	426 (61.60)	-	-		245 (57.80)	180 (67.70)	

10.50% consume tobacco, but their use has decreased due to pregnancy. Moreover, 2.20% of pregnant women had mentioned drug abuse.

The Mann-Whitney U showed a statistically significant correlation between contraception failure and the timing of prenatal care visits ( $p = 0.006$ ). The Chi-square test showed no statistically significant relationship between the timing of prenatal care (before 12 weeks, 12–20 weeks, and after 20 weeks) and pregnancy complications ( $p = 0.195$ ), place of residence (rural vs. urban) ( $p = 0.200$ ), and age of

women (below 18 years, 18–35 years, and above 35 years) ( $p = 0.382$ ).

## Discussion

The present study aimed to assess the reproductive life plan of women of childbearing age. Access to voluntary family planning and reproductive health services for everyone, inclusive of women, men, couples, and adolescents, supports the health and well-being of individuals and can have positive economic, environmental, and social benefits for families and communities.<sup>[16]</sup> The results showed that



**Table 3: Logistic regression analysis for contraceptive use and contraceptive failure**

Variable	Predictors of contraceptive use			Predictors of contraceptive failure				
	Crude B (95%CI)	<i>p</i>	Adjusted B (95% CI)	<i>p</i>	Crude B (95%CI)	<i>p</i>	Adjusted B (95%CI)	<i>p</i>
Age of respondents	1.07 (1.05,1.10)	< 0.001	0.0.96 (0.93,1.005)	0.092	1.03 (1.006,1.06)	0.018	-	-
Husband's age	1.06 (1.04,1.09)	< 0.001	-	-	1.03 (1.006,1.06)	0.012	0.95 (0.91,0.98)	0.005
Duration of marriage	1.14 (1.11,1.18)	< 0.001	-	-	1.05 (1.02,1.08)	< 0.001	-	-
Number of Children	2.91 (2.423,4.8)	< 0.001	1.43 (1.10,1.87)	0.007	1.64 (1.41,1.91)	< 0.001	2.09 (1.66,2.63)	< 0.001
Experiences of pregnancy	7.5 (5.52,10.14)	< 0.001	-	-	2.32 (1.44,3.74)	0.001	-	-
Experiences of childbirth	7.38 (4.33,12.56)	< 0.001	4.95 (2.57,9.54)	< 0.001	2.17 (0.91,5.20)	0.082	-	-
Experiences of abortion	0.45 (0.31-0.65)	< 0.001	-	-	-	-	-	-
Different types of contraception								
Hormonal contraception	-	-	-	-	0.73 (0.48,1.11)	0.153	0.34 (0.21,0.57)	< 0.001
Nonhormonal contraception	-	-	-	-	0.72 (0.51,1.01)	0.062	0.68 (0.46,1.01)	0.062
Withdrawal method	-	-	-	-	-	-	-	-

two-thirds of women in the study had used contraceptive methods. In the present study, about two-thirds of women who used a contraceptive method used traditional methods such as the withdrawal method that has a high prevalence of method failure. Ranjbar *et al.* reported that 83.4% of Iranian women used contraceptive methods,<sup>[17]</sup> which is inconsistent with the present study findings. This could be due to the way the results are reported. In the present study, we classified the unmet need for contraception as a category among the type of contraception methods, but in the study by Ranjbar *et al.*, the classification of results was different. This difference may be due to the time difference between the two studies. Their study was carried out between 2010 and 2011 and before changes in population policies.

Although there are limited restrictions on access to family planning services in Iran, these restrictions can have many implications. About 50% of women receive their contraceptives from governmental health centers; as a result, any restriction in access to these services is equal to increasing problems such as unintended pregnancy, illegal abortion, and maternal mortality.<sup>[18]</sup> Moreover, the most common type of contraception in the present study was the withdrawal method. Consistent with these findings, Ranjbar *et al.*<sup>[17]</sup> and Jarahi *et al.*<sup>[19]</sup> also reported the withdrawal method as the most commonly used method in their samples. In order to explain these findings, it can be noted that women and men of reproductive age have different backgrounds and reasons for their reproductive life plans.<sup>[13]</sup> According to the present study findings, about

one-third of the participants had an unmet need for family planning.

Our findings are consistent with the findings of Jarahi *et al.*; they reported that 24% of respondents had an unmet need for family planning.<sup>[19]</sup> Our findings are inconsistent with that of the study conducted in China by Zheng *et al.*<sup>[20]</sup> They reported that 90% of Chinese women use contraceptive methods and the most common contraceptive method in this study was long-acting reversible contraception. However, in the present study, about 66% used contraceptive methods, and the most common method was the natural method (about 42% of women). These results seem to allow comparison between the two studies. A possible cause of this difference is limited access to contraception. In the present study, it is notable that about two-thirds of the participants had insufficient income and preferred to use the natural method of withdrawal because of restrictions in providing contraceptives at health care centers. In order to explain our findings, it can be noted that the determinants of the natural method are comfort, ease, access, and being natural.<sup>[21]</sup>

The demographic characteristics influence contraceptive use. In the present study, the number of living children was one of the predictors that influenced contraceptive use. In this regard, the probability of using contraceptive methods increases by 1.5 times with an increase in the number of children. In other words, these factors cause a person to use a contraceptive method and continue to use it. Our findings are consistent with the findings of Hossain *et al.*<sup>[22]</sup>

and Palamuleni.<sup>[23]</sup> They reported a significant relationship between the number of children and the use of contraceptive methods.<sup>[22,23]</sup> In other words, when couples get their desired number of children, they are more interested in using contraceptives. Moreover, the history of childbirth increased the probability of using contraception by about five times. The present study findings are consistent with that of the study conducted by Amani *et al.*<sup>[24]</sup>

Moreover, demographic characteristics influence contraceptive failure. The findings of the present study revealed a strong association between the number of children and method failure. In this respect, the possibility of contraceptive failure in participants with children was two times higher than those with no children. These results might indicate that the increase in the number of children has been the result of previous unplanned pregnancies and contraception failures. Our findings are in line with those of Amani *et al.*<sup>[24]</sup> and Sanaei Nasab *et al.*<sup>[25]</sup> The present study showed that women with higher parities were more likely to terminate their pregnancy if it was unwanted. Most of the women who had an unwanted pregnancy and tried to abort it most likely had two or more children, and their ideal number of children was two. The present study showed, a contraceptive failure among women using some type of contraceptive method (whether traditional or modern).

Hormonal methods have been associated with a lower failure rate compared to natural and nonhormonal methods. In fact, hormonal contraceptives are highly effective at preventing pregnancy. The results of the present study were also consistent with that of the study by Ali and Abrejo<sup>o</sup> in Pakistan.<sup>[26]</sup> As reported in the literature, long-acting reversible contraception is much less likely to fail. Therefore, the quality of family planning services, especially effective and long-acting reversible family planning methods should be improved.<sup>[26]</sup>

The results of the present study showed that about 90% of women received prenatal care in the first trimester. Timely initiation of prenatal care in the first pregnancy trimester allows prevention, identification, and treatment of risk factors and late initiation of prenatal care could have negative impacts on both mother and child. In the current research, a significant association was observed between contraception failure and the timing of prenatal care. In other words, women who experienced contraception failure were referred to health care centers to receive prenatal care later than other women. In this respect, our findings are in line with the results obtained by Abame *et al.*<sup>[27]</sup> It has been repeatedly reported in previous studies that women with unintended pregnancies start prenatal care later and receive fewer prenatal care visits compared to others. The results of the present study showed that one-third of women received preconception counseling and consumed folic acid before pregnancy. Our findings are inconsistent with that of Jahani

Shourab *et al.*<sup>[28]</sup> They reported that 17.5% of women received preconception care.<sup>[28]</sup> This lack of consistency might be due to increased public awareness regarding preconception care because of the time interval between the two studies and the place of residence (urban and rural) of the women in the study. The participants in this study were urban residents, but the present study participants were both urban and rural residents.

Referrals in the first trimester of pregnancy did not decrease the risk of complications during pregnancy, and the rate of pregnancy-related complications in women who received their first pregnancy visit in the first trimester was similar to that of other women. This indicates that referral in the first trimester of pregnancy could not prevent pregnancy complications and that women need to be evaluated before pregnancy. The results of this study showed that about 89% of women receive prenatal care in the first trimester of pregnancy. Moller *et al.* reported that coverage of early antenatal care visits was 24% in low-income countries compared with 81.9% in high-income countries.<sup>[29]</sup> The mother's level of education and socioeconomic status are the major determinants, but factors such as availability, accessibility, acceptability, family support, and previous experiences with the health system also affect the timing of the first visit.<sup>[29]</sup> Early antenatal care is a critical opportunity for health providers to deliver care and support and to give information to pregnant women in the first trimester of pregnancy.

Investigation of high-risk behaviors of pregnant mothers showed that about 10% of women who were pregnant continued to use tobacco, which was mainly in the form of hookah, but their use was reduced due to pregnancy. Our findings are consistent with that of the study by Drake *et al.*<sup>[30]</sup> They found that 1 in 14 women who gave birth in the United States in 2016 (7.2%) reported smoking during pregnancy.<sup>[30]</sup> Substance abuse was observed in 2.2% of pregnant women. These women had either not been referred for pregnancy care or had a very irregular referral. They did not undergo their paraclinical examinations and did not even know their pregnancy stage. A limitation of this study was differences in the personality and individual characteristics of women and their psychological status, which affected their responses and could not be controlled by the researchers.

## Conclusion

According to the results of the present study, most women reported unplanned pregnancies. In addition, one-third of the respondents had an unmet need for family planning. The possible causes of these results could be new population control policies and restrictions on providing contraceptive methods at health centers. Nevertheless, RLP can be integrated with preconception care and family planning, and policymakers can serve it as a framework for promoting reproductive health across the lifespan of both men and women.

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## Conflicts of interest

Nothing to declare.

## References

1. Morse JE, Moos MK. Reproductive life planning: Raising the questions. *Matern Child Health J* 2018;22:439-44.
2. Department of Economic and Social Affairs, Population Division. Family Planning and the 2030 Agenda for Sustainable Development: Data Booklet. United Nations: Department of Economic and Social Affairs; 2019. Available from: [www.un.org/desa/pdf/family/familyPlanning\\_DataBooklet\\_2019](http://www.un.org/desa/pdf/family/familyPlanning_DataBooklet_2019).
3. Bellizzi S, Mannava P, Nagai M, Sobel H. Reasons for discontinuation of contraception among women with a current unintended pregnancy in 36 low and middle-income countries. *Contraception* 2020;101:26-33.
4. Coffey K, Shorten A. The challenge of preconception counseling: Using reproductive life planning in primary care. *J Am Assoc Nurse Pract* 2014;26:255-62.
5. Mazloomzadeh S, Khazaghi ZR, Mousavinasab N. The prevalence of metabolic syndrome in Iran: A systematic review and meta-analysis. *Iran J Public Health* 2018;47:473-80.
6. Rahmani A, Sayehmiri K, Asadollahi K, Sarokhani D, Islami F, Sarokhani M. Investigation of the prevalence of obesity in Iran: A systematic review and meta-analysis study. *Acta Med Iran* 2015;53:596-607.
7. Azami M, Darvishi Z, Sayehmiri K. Systematic review and meta-analysis of the prevalence of anemia among pregnant Iranian women (2005-2015). *Iran J Med Sci* 2016;17:e38462. doi: 10.17795/semj38462.
8. Vakilian K, Ranjbaran M, Khorsandi M, Sharafkhani N, Khodadost M. Prevalence of preterm labor in Iran: A systematic review and meta-analysis. *Int J Reprod BioMed* 2015;13:743-8.
9. Johnson K, Posner SF, Biermann J, Cordero JF, Atrash HK, Parker CS, *et al.* Recommendations to improve preconception health and health care—United States: Report of the CDC/ATSDR preconception care work group and the select panel on preconception care. *MMWR Recomm Rep* 2006;55:1-23.
10. Malnory ME, Johnson TS. The reproductive life plan as a strategy to decrease poor birth outcomes. *J Obstet Gynecol Neonatal Nurs* 2011;40:109-19.
11. Liu F, Parmeter J, Straughn M. Reproductive life planning: A concept analysis. *Nurs Forum* 2016;51:55-61.
12. Hipp S, Carlson A, McFarlane E, Sentell TL, Hayes D. Insights in public health: Improving reproductive life planning in Hawaii: One key question®. *Hawaii J Med Public Health* 2017;76:261-4.
13. Tydén T, Verbiest S, Van Achterberg T, Larsson M, Stern J. Using the reproductive life plan in contraceptive counselling. *Upsala J Med Sci* 2016;121:299-303.
14. Jalali R, Mohammadi M, Vaisi-Raygani A, Ghobadi A, Salari N. Prevalence of unwanted pregnancy in Iranian women: A systematic review and meta-analysis. *Reprod Health* 2019;16:133.
15. Fooladi E, Weller C, Salehi M, Abhari FR, Stern J. Using reproductive life plan-based information in a primary health care center increased Iranian women's knowledge of fertility, but not their future fertility plan: A randomized, controlled trial. *Midwifery* 2018;67:77-86.
16. World Health Organization Department of Reproductive Health and Research (WHO/RHR) and Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP), Knowledge for Health Project. Family Planning: A Global Handbook for Providers (2018 update). Baltimore and Geneva: CCP and WHO, 2018.
17. Ranjbar F, Shirzad M, Kamali K, Akhondi MM, Ghodjani A, Ardakani ZB, *et al.* Fertility behaviour of Iranian women: A community-based, cross-sectional study. *Arch Iran Med* 2015;18:2-5.
18. Sarvestani KA, Ahmadi A, Enayat H, Movahed M. Level and factors related to unintended pregnancy with a brief review of new population policies in Iran. *Iran J Public Health* 2017;46:973-81.
19. Jarahi L, Zavar A, Neamat Shahi M. Evaluation of the frequency of unwanted pregnancy and its related factors in the pregnant women of Sarakhs city. *Iran J Obstet Gynecol Infertil* 2014;17:8-14.
20. Zheng X, Tan L, Ren Q, Cui Z, Wu J, Lin T, *et al.* Trends in contraceptive patterns and behaviors during a period of fertility transition in China: 1988–2006. *Contraception* 2012;86:204-13.
21. Rahnama P, Hidarnia A, Montazeri A, Aminshokravi F, Kazemnejad A, Soltanahmadi Z. Salient beliefs relevant to oral contraceptives among withdrawal users for development of a belief-based questionnaire: Applying the theory of planned behavior. *J Qual Res Health Sci* 2012;1:202-13.
22. Hossain MB, Khan MH, Ababneh F, Shaw JE. Identifying factors influencing contraceptive use in Bangladesh: Evidence from BDHS 2014 data. *BMC Public Health* 2018;18:1-4.
23. Palamuleni ME. Socio-economic and demographic factors affecting contraceptive use in Malawi. *Afr J Reprod Health* 2013;17:91-104.
24. Amani F, Bashiri J, Moghaddam N, Tabarraie Y. Application of logistic regression model in surveying effective causes of unwanted pregnancy. *Qom Univ Med Sci J* 2010;4:32-60.
25. Sanaei Nasab H, Jahan HR, Tavakoli R, Tavakoli H, Shokravi FA. Correlates of unwanted pregnancy among pregnant women attending medical and health centers in Semnan, Iran. *Hayat* 2009;15:81-6.
26. Ali S, Abrejo F. The relationship between contraceptive use and unintended pregnancies among married women in Thatta District, A Pakistan. *Journal of Midwifery and Reproductive Health* 2017;5:950-7.
27. Abame DE, Abera M, Tesfay A, Yohannes Y, Ermias D, Markos T, *et al.* Relationship between unintended pregnancy and antenatal care use during pregnancy in Hadiya Zone, Southern Ethiopia. *J Reprod Infertil* 2019;20:42-51.
28. Jahani Shourab N, Ghaffari Sardasht F, Jafarnejad F, Esmaili H. Assessment of prenatal care process based on donabedian model in Mashhad health centers. *Iran J Obstet Gynecol Infertil* 2013;16:7-17.
29. Moller AB, Petzold M, Chou D, Say L. Early antenatal care visit: A systematic analysis of regional and global levels and trends of coverage from 1990 to 2013. *Lancet Glob Health* 2017;5:e977-83.
30. Drake P, Driscoll AK, Mathews TJ. Cigarette smoking during pregnancy: United States, 2016. *NCHS Data Brief* 2018;1:1-8.