



## Fertility intention and its sociodemographic correlations among female marriage volunteers: A province-wide cross-sectional survey in Iran

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### Abstract

**Background:** Declining fertility rates pose significant demographic challenges globally, particularly in Europe, the Asia-Pacific region, and Iran. Female marriage volunteers, as a group capable of having children, are a key target for pronatalist policies. We aimed to identify the factors influencing fertility intention among Iranian female marriage volunteers.

**Methods:** We conducted a province-wide cross-sectional survey from January to April 2023. Using a convenience sampling approach and a validated questionnaire (Determinants of Childbearing Intention Questionnaire), we assessed the childbearing intention (i.e., intention to have a child during the next three years) and fertility intention (i.e., ideal number of kids) among 1,506 female marriage volunteers in Kerman, Iran. Data were collected through face-to-face interviews and the sealed ballot box method was applied to ensure the confidentiality of the participants' information. Multivariate logistic regression was used to identify the factors associated with childbearing and fertility intentions.

**Results:** The majority of the female marriage volunteers (83.7%) intended to have two or more children, and 61.8% of them intended to have a child during the next three years. They believed that the most appropriate time to have a child after marriage was 2.2 (1.8) years. Physical and mental health, with a mean of 4.37 (0.94) out of a possible score range of 0 to 5, was the most important perceived barrier to having children. The participants stated that the most appropriate ages for women and men to marry were 22.1 (3.7) and 26.2 (3.9) years, respectively. The vertical collectivism score was 3.90 (0.85) out of the maximum attainable score of 5. The working or educational situation of premarital women was a barrier against fertility intention (OR=0.82; CI95%= 0.71-0.94,  $p<0.001$ ) and childbearing intention (OR=0.81; CI95%= 0.73-0.89,  $p<0.001$ ).

**Conclusion:** Despite the decline in the total fertility rate, the tendency to have children is still promising in Iranian female marriage volunteers. Their concern about work and education was the main obstacle to their childbearing intention. This finding underlines the need to implement supportive measures for having children, as seen in the law.

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### Highlights

#### What is current knowledge?

Many studies have been conducted both in Iran and around the world that have measured the intention of married women to have children. However, women who are about to get married are neglected from these measurements.

#### What is new here?

This study showed that the majority of the female marriage volunteers intended to have two or more children, and two-thirds of them intended to have a child during the next three years. This finding thus underlines the need to implement the incentives for having children that were seen in the law.

### Introduction

Childbearing is one of the most significant demographic phenomena, and maintaining an acceptable rate of childbearing is an important challenge for contemporary societies (1). It is strongly influenced by the fertility intentions of young people in a country or region (1). Childbearing and maintaining the replacement level fertility rate (A total fertility rate of 2.1 children per woman) are considered essential for sustainable development in countries, as they affect the composition and structure of the population, thereby protecting countries from the phenomenon of aging and the associated risks (2).

The global total fertility rate (TFR) is declining, and Iran has also experienced a significant 70% decline in the TFR over the past three decades (3). Globally, the TFR has dropped from 3.61 in 1980 to 2.23 in 2021 (4). The TFR in Iran has continuously decreased from 7.41 children in 1980 to 1.52 children per woman in 2021 following the implementation of population control laws in April 1993 (4). This rate is below the replacement level fertility rate (i.e., total fertility below 2.1 children), indicating a notable demographic shift. In this

context, Iran is projected to become the second-fastest aging country in the world between 2015 and 2050, following South Korea, in terms of the growth rate of the older population percentage (5). The significant decline in the TFR will lead to notable demographic changes, such as population aging worldwide, especially in Iran. Owing to the drastic decrease in the TFR and increased life expectancy, it is anticipated that the elderly population in Iran will increase from 10% in 2015 to over 30% by 2050 (6). Currently, low fertility and population aging are two of the most significant challenges Iran has faced in recent decades. These phenomena affect the economy, workforce, society, healthcare needs, environment, and geopolitical position of any country (7).

In addition to the decline in the TFR, the likelihood of having two or more children has decreased in Iran over the last twenty years. This decline is influenced by various factors, such as economic status, e.g., child-rearing costs, social factors, e.g., women's inclination toward education and employment, and cultural factors, e.g., changes in women's inclination toward marriage and childbearing at later ages, the weakening of traditional values, and the tendency toward individualistic norms and lifestyles. All these factors negatively impact fertility intentions (8). On the other hand, it has been shown that the fertility rate is higher in societies with collectivist values (9). Although freedom and autonomy are the main concerns in individualistic cultures, having concerns about others is of primary importance in collectivistic cultures (9). In this regard, collectivism could be categorized into horizontal collectivism (Equality) and vertical collectivism (Hierarchy) (9). Therefore, evaluating fertility intentions in a culture transitioning from collectivism to individualism may have broader implications beyond non-Western countries. Over the past three decades, the average age of marriage in Iran has risen to 23.6 for women and 27.4 for men (10). Additionally, the age of couples at the time of having their first child has increased as well (11).

In Iran, considering the marked changes in fertility rates and increasing age, the population law supports family and youth passed into enactment by the Islamic Council on October 30, 2021. This law includes incentives to encourage couples toward childbearing and marriage for young individuals. To enhance the implementation of this law and increase fertility rates in Iran, it is crucial to

address questions such as the desire for fertility and the inclination toward having two or more children to mitigate emerging demographic challenges, particularly from the perspective of the new generation of women and potential mothers, as they constitute the focal point of childbearing. Moreover, newly married women are a population group that can potentially have children. Therefore, it is necessary to research their intention to have children in order to develop a pronatalist policy. To this end, this study aimed to identify the correlations of fertility childbearing intention among Iranian female marriage volunteers.

## Methods

### Study design and setting

This cross-sectional study was conducted on 1,506 female marriage volunteers (Out of 1,600 approached women, with a response rate of 94.1%) in Kerman Province, located in Southeastern Iran, from January to April 2023. Kerman Province has a population of approximately 3.5 million, and there are approximately 24,000 marriages annually. Participants were recruited from women who attended premarital education classes. According to the law, participation in classes is mandatory for all those who intend to marry (12). Usually, their marriage is legally registered shortly after the end of class (13). The purpose of the study was initially explained to the class participants, who were asked to complete the questionnaire anonymously. After completing the questionnaire, they were instructed to place it in a box at the front of the classroom. The sealed ballot box method was applied to ensure the confidentiality of the participants' information. Convenience sampling was used as the sampling method.

The inclusion criteria were to be Iranian, residing in Kerman, age between 15 and 40 years, preparing to marry for the first time, and the absence of significant mental disorders based on self-report as well as willingness to participate. The exclusion criterion was incomplete completion of the questionnaire.

### Measurement tools

The measuring instrument (Appendix) included part of a questionnaire named "Determinants of Childbearing Intention Questionnaire" developed by Nakhaee and Khajeh in 2022. It consisted of four sections and 15 items. Evidence supporting the psychometric properties of the questionnaire has already been published (14). The content validity of the questionnaire was confirmed in a previous study, and the overall Cronbach's alpha of the subscales (Perceived barriers and vertical collectivism scales) of the questionnaire was 0.76 (14). In the first part, there were three items related to the demographic information of the participants (i.e., age, education level, and job). The second part collected information regarding childbearing and fertility intentions. Childbearing intention was measured with the item "Do you intend to have a child during the next 3 years?" (15). We asked the question "How many children do you want to have?" to examine fertility intention (16). We divided the responses into two categories (Zero children or one child and two or more children). In this section, we also asked them about the appropriate age for marriage. Since Iranian

wedding is divided into Aghd (Marriage contract in which the young couple religiously becomes wife and husband) and Aroosi (The wedding ceremony, which means the beginning of life under one roof), we asked them about the time interval between these two distinct parts. The last question of this part was "How many years after marriage do you think it is better to have children?". In the third part, we assessed the perceived barriers to the decision to have a child by three items regarding economic situation, physical and mental health, and working conditions. The respondents' perceptions of fertility barriers were assessed via a 5-point Likert scale ranging from 1 (Completely disagree) to 5 (Completely agree). A higher score indicates greater importance of the barrier from the perspective of the respondent. The fourth part measured vertical collectivism with three-item scale of vertical collectivism (17). A sample item is "It is my duty to take care of my family even when I have to sacrifice what I want." The item responses were measured on a 5-point Likert scale. Higher scores indicate a stronger collectivist orientation.

### Statistical analysis

Descriptive statistics (Percentages and frequencies or means and standard deviations [SDs]) were used to describe the data. Multivariate logistic regression was performed to examine the relationships of predictor variables with childbearing intentions, and the findings are reported as odds ratios (ORs) and 95% confidence intervals (CIs). The Hosmer–Lemeshow test was used to assess the goodness of fit of the model. The SPSS version 25 (IBM Corp., Armonk, N.Y., USA) was used for the statistical analysis. P-values of less than 0.05 were considered statistically significant.

## Results

The mean age (SD) of the 1,506 participants was 23.6 (6.0) years. Almost 40% of them (n=606) had a college degree. The participants stated that the most appropriate ages for women and men to marry were 22.1 (3.7) and 26.2 (3.9) years, respectively. The respondents stated that the right time to have a child after marriage was 2.2 (1.8) years. Nearly 84% of them intended to have two or more children. The most important perceived barrier to having children was related to physical and mental health, with a mean (SD) of 4.37 (0.94) out of a possible score range of 0 to 5. The demographic characteristics of the study sample are summarized in Table 1.

Future fertility intentions did not differ according to the sociodemographic variables ( $p>0.05$ ). Compared with young women, older women had greater intentions to have a child within three years after marriage ( $p<0.001$ ). Additionally, the participants mostly intended to have a child before one year of starting a life together rather than after one year (67.7% Vs. 55.4%;  $p<0.001$ ) (Table 2).

The multivariate logistic regression analysis revealed that perceptions of the working or educational situation of premarital women may act as a barrier against fertility intention (OR=0.82; 95% CI=0.71-0.94;  $p<0.001$ ) and childbearing intention (OR=0.81; CI 95%=0.73-0.89;  $p<0.001$ ). The vertical collectivism score had a reinforcing association with both outcome variables (Table 3).

**Table 1.** Demographic and fertility-related characteristics of the participants (n=1,506)

Characteristic	N (Percentage)
<b>Age group (Year)</b>	
15-20	563 (37.4)
21-30	729 (48.4)
31-40	214 (14.2)
<b>Education level</b>	
Less than college	900 (59.8)
College	606 (40.2)
<b>Job</b>	
Housewife	1169 (77.6)
Employed	337 (22.4)
<b>Estimated time to start living under one roof</b>	
Before one year	789 (52.4)
After one year or more	717 (47.6)
<b>Intention to have a child during the next 3 years</b>	
Yes	931 (61.8)
No	575 (38.2)
<b>Having intention to have two or more children</b>	
Yes	1261 (83.7)
No	245 (16.3)
<b>Perception of childbearing barriers</b>	
	<b>Mean (SD)*</b>
Physical and mental health	4.27 (0.94)
Economic status	3.89 (1.06)
Working or educational situation	3.48 (1.21)
Vertical collectivism score	3.90 (0.85)

\*Standard Deviation

**Table 2.** Comparison of future fertility intentions and intention to have a child within three years after marriage on the basis of sociodemographic characteristics (n=1,506)

Characteristic	Future fertility intention		P-value	Intention to have a child within three years after marriage		P-value
	One child or childless	Two children or higher		Yes	No	
<b>Age group (Year)</b>	<b>N (Percentage)</b>			<b>N (Percentage)</b>		
15-20	97 (17.2)	466 (82.8)	.705	294 (52.2)	269 (47.8)	< 0.001
21-30	113 (15.5)	616 (84.5)		460 (63.1)	269 (36.9)	
31-40	35 (16.4)	179 (83.6)		177 (82.7)	37 (17.3)	
<b>Education level</b>						
Less than college	144 (16)	756 (84)	.731	549 (61.0)	351 (39.0)	0.425
College	101 (16.7)	505 (83.3)		382 (63)	224 (37)	
<b>Job</b>						
Housewife	182 (15.6)	987 (84.4)	0.171	725 (62)	444 (38)	0.767
Employed	63 (18.7)	274 (81.3)		206 (61.1)	131 (38.9)	
<b>Starting life together</b>						
Before one year	126 (16)	663 (84)	0.724	534 (67.7)	255 (32.3)	< 0.001
After one year or more	119 (16.6)	598 (83.4)		397 (55.4)	320 (44.6)	

**Table 3.** Multivariate logistic regression model to identify relevant sociodemographic variables associated with childbearing intention among female marriage volunteers (n=1,506)

Variables	Adjusted OR*	P-value	95% CI**
<b>Intention to have a child within three years after marriage as outcome variable</b>			
<b>Age group (Year)</b>			
15-20	Reference	-	-
21-30	1.54	< 0.001	1.22-1.93
31-40	3.95	< 0.001	2.65-5.89
<b>Starting life together</b>			
After one year or more	Reference	-	-
Before one year	1.50	< 0.001	1.20-1.86
<b>Perception of childbearing barriers (Score)</b>			
My health (Physical and mental health)	1.22	0.002	1.07-1.38
My working or educational situation	0.81	< 0.001	0.73-0.89
Vertical collectivism score	1.04	0.024	1.01-1.08
<b>Future fertility intention as the outcome variable</b>			
<b>Job</b>			
Housewife	Reference	-	-
Employed	0.99	0.97	0.72-1.38
<b>Perception of childbearing barriers (Score)</b>			
My economic status	0.76	< 0.001	0.64-0.89
My health (Physical and mental health)	1.10	0.269	0.93-1.32
My working or educational situation	0.82	0.004	0.71-0.94
Vertical collectivism score	1.10	< 0.001	1.05-1.15

\* Odds Ratio

\*\*Confidence Interval

## Discussion

Female marriage volunteers represent a population group with potential childbearing capacity. Therefore, it is necessary to research their intention to have children in order to develop pronatalist policies. A decline in fertility is one of the most prominent health concerns in low-fertility countries such as Iran. This cross-sectional study was conducted with the aim of comprehensively assessing fertility intentions and the related factors of female marriage volunteers in Kerman Province, Iran. Our study revealed that the majority of the female marriage volunteers intended to have two or more children.

Based on previous studies, in our study, we conceptualize fertility intentions as the intent to have a certain number of children (18). Overall, the participants in our study had an optimal intention regarding fertility and childbearing. Our findings also revealed that a greater percentage of Iranian women in Kerman (83.7%) intended to have children in the future than women did in European countries, including Russia (14.1%), Italy (22.6%), Germany (30.4%), France (47.9%), and Hungary (48.9%) (19).

Although there is a multifaceted relationship between fertility intentions and fertility behavior, fertility intentions do not necessarily lead to actual fertility and realized childbearing (20). Nevertheless, studies on low-fertility countries have shown that fertility intentions have a positive, strong, independent effect on actual fertility and tend to be greater than actual fertility (21).

Policymakers involved in youth population law should recognize that women's fertility and childbearing intentions are influenced by multiple factors at both the micro (Individual characteristics, personal unconscious motivations) and macro (Cultural, social, economic, political, and familial) levels, which are intricately intertwined (22). It is not possible to disentangle their effects and relationships. Therefore, to promote childbirth in Iran, it is essential to design and implement a multidimensional program tailored to the societal context. Many studies have shown that relying solely on a single population policy to stimulate fertility will have limited effects on increasing actual fertility rates and realizing childbearing intentions (23).

Age at marriage is an important factor affecting the intention or motivation to have children (24). In our study, participants expressed the suitable age for marriage for women and men as 22.1 (3.7) and 26.2 (3.9), respectively. Considering the increasing age of marriage worldwide (30.4 for men and 28.6 for women in the United States, 33.72 for men and 31.26 for women in Korea (25), and 23.6 for women and 27.4 for men in Iran (10), the attitudes of female marriage volunteers toward timely marriage are appropriate. Policymakers should take steps to remove barriers at various levels to ensure that this positive attitude is not influenced by environmental factors and can lead to timely marriages.

In Iran, there is often a gap between formal and legal marriage and the commencement of cohabitation, with 47.6% of participants expressing a reluctance to initiate cohabitation with their spouse and start a family until one year or more later. This delay in starting life together could hinder parenthood. In contrast, numerous studies have indicated that early cohabitation and parenthood in couples can serve as protective factors against separation or divorce (26). The age of couples at the beginning of life affects prenatal fertility intentions and childbearing in both men and women. The age of a woman has an essential role in fertility intentions. The older the woman is at the beginning of life, the sooner the couple has their first child. For the second and third children, the age of the woman has a negative influence (8).

In the present study, the most important perceived barrier to having children was related to physical and mental health, with a mean (SD) of 4.37 (0.94) from 5. Interestingly, the expression of this issue by participants, as the most significant barrier in Kerman Province, was also found in a relevant study (15), highlighting an important finding that has not been emphasized as the primary obstacle in similar studies in other provinces of Iran (8) and some studies in other countries (26,27). This indicates that if mental and physical health status are "favorable will enable people to act on their intentions to have a child or, if unfavorable, will make it difficult for them to have a child despite their intentions to do so" (18). Systematic improvements in access to preconception healthcare,

strong maternal and child health services, and the implementation of paid parental leave and maternity insurance should be increased. Therefore, the delivery of health services for pre-pregnancy in Iran should be studied and, if necessary, revised to meet these objectives. It seems that improvement in preconception care not only may reduce the concern of women who want to get pregnant to some extent but also it would be associated with improved reproductive and perinatal outcomes (28).

Our findings showed that women's concern about continuing education and being involved in the workplace may act as a barrier against fertility intentions (OR=0.81; CI 95%=0.73-0.89) and childbearing intention (OR=0.81; CI 95%=0.73-0.89). In similar studies conducted in Iran (8,15) and globally (24,27), factors such as a desire for higher levels of education and occupational status among women, aiming to attain stable employment and improve socioeconomic status, have been identified as barriers to timely marriage and fertility intentions. The delay in marriage due to these factors is associated with decreased fertility, as individuals postpone childbearing and have fewer children. Hence, policymakers should consider providing facilitated measures as stated in the "family and youth of the population" law to support families and the youth population, such as maternity leave, reduced working hours to support maternal education and employment, and mitigating its negative impact on fertility. These measures aim to address the balance between work and family relationships, as these women do not intend to have more children. Similar demands for governmental support were also observed among participants in studies conducted in Iran, emphasizing the provision of such facilities for mothers (22).

Our study revealed that collectivism may play a promoting role in the future fertility intentions of newlyweds women. It has been shown that individualistic values are related to low fertility intentions in two ways. First, it negatively impacts family and social motivations for childbearing and fertility values (29). Second, it potentiates the negative influences of economic uncertainty on fertility intention (30). Therefore, in Iranian society, given the shift in values toward individualism as well as unfavorable economic conditions, it is necessary to preserve the traditions and values of collectivism to strengthen the intention for childbearing. The main limitation of the study was its cross-sectional nature, which limited our ability to address causal relationships.

## Conclusion

The majority of the female marriage volunteers intended to have two or more children and two-thirds of them intended to have a child during the next three years. The most important perceived barrier to having children was their worries about physical and mental health. Despite the decline in the TFR, the findings suggest that childbearing intentions remain favorable among Iranian female marriage volunteers. Therefore, it seems that there is space for implementing financial and welfare policies to encourage childbearing. Providing facilitated measures within the law of the youth population, such as ensuring access to and the quality of healthcare services for mothers and, if necessary, revision to meet these objectives, is needed. The findings of this study have valuable potential for researchers in other countries with similar cultural backgrounds and low fertility rates. Our study raises a number of lines of investigation for future research in countries with low fertility rates.

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## Ethical statement

The study protocol was reviewed and approved by the Ethics Committee of Kerman University of Medical Sciences (Ethics code: IR.KMU.REC. 1402.055). Before each interview, the purpose and methods of the research were explained to potential participants. Oral informed consent was obtained. The Ethics Committee also approved the oral informed consent method. Accordingly, participants older than 15 years old were considered decision-making competent to decide on research participation. The interviews were conducted with the commitment of the researcher to maintain the anonymity and confidentiality of the information and the right of the participants to leave the research at any time. The study method was conducted following available regulations and guidelines.

## Conflicts of interest

The authors declare that they have no competing interests.

## Author contributions

NN, designed the project. FA and MS collected the data. NN carried out the statistical analysis, AI and HS prepared the first draft of the manuscript. All authors read and approved the final draft of the manuscript and critically revised it for intellectual content.

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