

# Determinants of Fertility in Rural Women of Fars Province: Actual and Ideal Fertility and Fertility Intention

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## Abstract

**Background:** During the last two decades, fertility has declined to replacement level in rural areas of Iran. The current study investigated the determinant factors of actual and ideal fertility, and fertility intention in rural women of Fars province.

**Methods:** This is a cross-sectional study. The sample comprised 1301 rural married women aged 15 to 49 years in Fars province. Data were gathered in 2015 using structured questionnaires. Statistical analysis was run on STATA software, version 12.0. The semi-partial correlation was run to show the unique effect of each variable while controlling all the other variables. Finally, a multiple regression model was run with a significance level of 0.05.

**Results:** The means±SD of actual and ideal fertility were 2.11±1.32 and 2.81±0.96, respectively, and for fertility intention it was 2.92±1.00 (Age was the most determinant factor of actual, ideal fertility and fertility intention. The second effective factor was age at first birth. The determination coefficient for the actual fertility model showed that 62.1% of the variance in actual fertility was explained by age, age at first birth, woman's education, and use of contraceptive methods. For ideal fertility and fertility intention, about 16.2% and 27.5% of the variance were explained by the independent variables, respectively.

**Conclusion:** As a result of the rise in education and social position of younger women, the opportunity cost of having a child is more effective than ever. Therefore, fertility incentive policies could not be effective in increasing fertility, even in among rural population.

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**Keywords:** Fertility intention, Ideal fertility, Actual fertility, Rural-women

## Introduction

Over the past twenty five years, fertility has declined rapidly in many developing countries. Studies have revealed that this trend will continue until the replacement level is reached.<sup>1,2</sup> Iran is not an exception; since 1985, the greatest and quickest decline in fertility in Iran has occurred because of the government's population control programs.<sup>3</sup> Iran has experienced several different policies on population control during the past four decades.

During the last two decades, fertility has declined in rural women to replacement level. In fact, Iran's fertility declined from 7.0 births per woman in 1980 to around 1.8 to 2.0 in 2011.<sup>4,5</sup>

Fertility is a purposive behavior that is based on intention.<sup>6</sup> The intentions are formed under immediate influence of personal attitudes towards having a child, subjective norms, and perceived behavioral control.<sup>7</sup>

Generally, in low fertility rates, a gap between

fertility intention and behavior is experienced.<sup>8</sup> Hagewen and others showed that many low-fertility societies had childbearing intentions well above the current fertility levels.<sup>9</sup> Fertility rates may differ from population to population and be driven by both socio-economic and institutional factors. Furthermore, they are free from biological, cultural, social, and environmental factors.<sup>10-12</sup>

Age at marriage is a significant factor in a woman's life affecting overall completed fertility and its relationship with the status of women.<sup>13</sup> Several recent studies have shown that education delays marriage and childbirth by enhancing the autonomy of women through employment and giving them more influence in the marriage decision.<sup>14-16</sup> Another factor that determines the level of fertility in a population is age at first birth. Women who start their reproductive life earlier still tend to have larger families.<sup>14, 17</sup> In rural Peru, the simulated age at first birth for a woman with no education and no family planning available in her community is about three years lower than women with 10 years of education.<sup>18</sup> Moreover, the gender composition of surviving children influences the desired family size.<sup>19</sup>

Today, women in high-resource countries delay childbearing until the age of 30 years or older.<sup>20</sup> However, a positive relationship has been detected between child-timing intention and a country's level of GDP per capita. People who live in countries with a high GDP tend to anticipate the birth of a second child.<sup>7</sup>

The current study aimed to investigate three measurements of fertility (actual fertility, ideal fertility, and fertility intention) to obtain a better insight into the main determinant factors of the three mentioned variables.

## Methods

This is a descriptive-analytic study. The survey was conducted from July to August 2015 in Fars province of Iran. The study population consisted of rural (considering the tribal population) married women aged 15 to 49 years in Fars. According to the latest population and housing census in Iran, the number was 279460.<sup>21</sup> According to the following formula, the sample was estimated 383 women. Considering the goals of the study and the sampling method (the effect was 1.5), the sample size comprised 575 rural women selected through clustered random sampling.

$$n_0 = \left[ \frac{z^2 \cdot \frac{\alpha}{2} \cdot P}{d^2} \right] \quad Z=1.96, \alpha=0.05, P=0.5, d=0.05$$

For tribal regions, 237 people were selected using the determinate population correction formula due to the limited population size. To calculate the sample

size for tribal population, we also used the following formula:

$$m = \frac{z^2 \cdot 1 - \frac{\alpha}{2} \cdot P(1 - p)}{d^2}, n = \frac{m}{1 + \frac{m}{N}}$$

According to a subgroup analysis in different ethnic groups and also to reduce the error, the completed questionnaire to 1310. For this purpose, each county was considered a cluster. In each county, rural areas were considered as the clusters. The required sample size was determined in each cluster based on the rural population of that area and proportional to the population. In the next step, based on the list of villages located in the statistics center of each city's health center and proportional to the population of each one, the number of villages required for the survey was randomly selected. In the last step, the center of the selected villages was selected, and one from every five houses was systematically chosen. The process continued (from the right side of the first house) until the size of each cluster was reached (10 individuals).

Inclusion criteria were being female and married, aged 15 to 49 years, being fertile, being in a family union and sexually active, and being willing to participate in the study. Exclusion criteria were incomplete responses to the questionnaire and lack of willingness to participate in the study. The data were gathered using structured questionnaires. Verbal consent was obtained before completing the questionnaire.

## Instrument

The data gathering tool in this study consisted of 34 questions including: questions regarding the demographic characteristics of women (age, age at first marriage, income and educational level, husband's educational level, and social class), their reproductive history, actual and ideal fertility, fertility intention, and contraceptive information. The income level was determined through an eight option question (regardless of the amount of subsidy). Considering the low level of income among studied women, we recoded the options to 6 options (1=without income, 2=less than 150\$ to 6=more than 750\$) (Table 1). Self-evaluation of the respondents about their social class was applied with a 5-point Likert scale (from 1=low to 5=high). In other words, the respondents were asked to express their social class in terms of their economic and social status in the society. In terms of fertility, they were asked to count the number of their living children, the number of children they intend to have (the ideal number), and whether they intend to become pregnant and have more children in the future (fertility intention)

Gender preference and child spacing, ideals and attitudes toward childbearing were also asked.<sup>22</sup> Each

**Table 1:** Demographic characteristics of the studied rural sample

Variable		N (%)
Woman's age*		32.77±7.15
Woman's age at first marriage*		20.44 ±4.44
Age at first birth*		22.29 ±4.55
Educational level	Illiterate	67 (5.2)
	Elementary	473 (36.4)
	Guidance school	286 (22.0)
	High school	120 (9.2)
	Diploma	231 (17.8)
	University degree	123 (9.4)
Income level**	Without income	528 (42.8)
	> 150	446 (36.1)
	150-250	135 (10.9)
	250-500	45 (3.6)
	500-750	11 (0.9)
	<750	69 (5.6)
Social class	Low	227 (17.6)
	Low middle	258 (20.0)
	Middle	679 (52.7)
	High middle	105 (8.1)
	High	20 (1.6)
Contraceptive use	Yes	954 (73.3)
	No	347 (26.7)
Gender preference	Yes	1272 (98.4)
	No	21 (1.6)
Attitude toward childbearing	Negative	3 (0.2)
	No difference	30 (2.3)
	Positive	1256 (97.5)

\*mean±SD; \*\*Dollar (at the time of the study, the value of each Dollar was equal to 4000 Toman)

woman's attitude towards childbearing was assessed through five questions using the Likert scale. The questions were designed based on the new approach to fertility health program in Iran. The questionnaire's validity was assured using face validity.

One of the family health experts of each county was trained on how to complete the study's questionnaire; the trained experts were then asked to train the interviewers in their respective counties. Because of the low level of literacy of some of the rural women, the trained experts asked the questions and completed the questionnaires with the participants' answers.

#### Data Analysis

Statistical analysis was performed on STATA package (STATA Corp. version 12). The descriptive statistics provided detailed characteristics of the sample. The independent sample t-test and one-way ANOVA test were used to compare the mean values to determine any differences. Considering that some independent variables have overlapping effects, we measured partial and semi-partial correlation of the dependent variables (actual fertility, ideal fertility, and fertility intention) with the independent variables to show how much each independent variable contributed to controlling all the other variables. A P value of 0.05 was considered significant. Finally, a multiple

regression model was run to assess the importance of each variable in explaining the dependent variables.

#### Results

The mean age of the women in this study was 32.77±7.15 years. The majority of them were under-graduate (72.7%). The other demographic characteristics of the studied sample are shown in Table 1.

The means of actual fertility and ideal fertility were 2.11±1.32 and 2.81±0.96, respectively, and the mean of fertility intention was 2.92±1.00. As age increased, all the three variables also increased. Figure 1 shows the details.

#### *Differences in Actual Fertility, Ideal Fertility, and Fertility Intention According to Contraceptive Use and Child's Gender Preference*

A significant difference was found in actual fertility among the females who used contraceptive methods (2.31±1.22) in comparison with those who did not (1.42±1.22) (t=11.70, P=0.0001).

The dissimilarity in ideal fertility was also significant in the mentioned groups (t=-1.940, P=0.05). In fact, those who used contraceptive methods had less ideal fertility (2.784±0.958) than those who did not (2.902±0.974). However, the difference in fertility

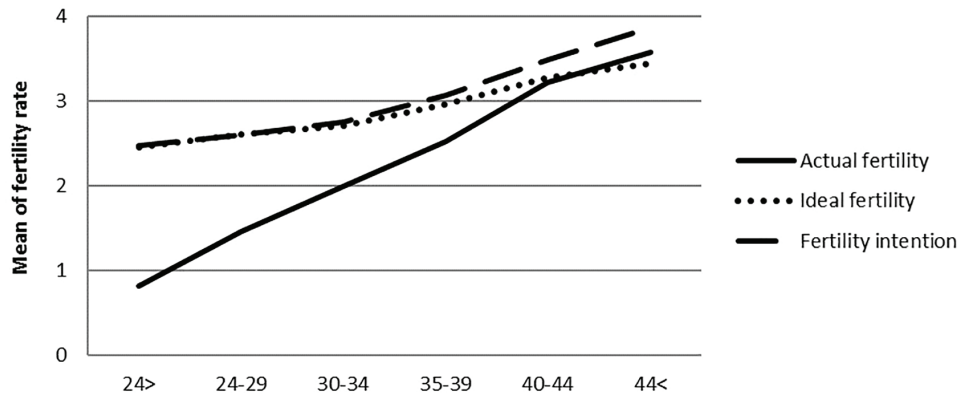


Figure 1: Mean of actual and ideal fertility and fertility intention among rural women in terms of age groups

intention was not statistically significant among these two groups ( $t=0.646, P=0.518$ ).

According to one-way ANOVA test results, ideal fertility was significantly different between women who had a gender preference for sons, daughters, and those who had no gender preference ( $F=3.552, P=0.029$ ). The difference in fertility intention among these three groups was also significant ( $F=4.134, P=0.016$ ). Despite these differences, there was no significant difference in actual fertility ( $F=2.405, P=0.091$ ).

According to the results of semi-partial correlations, the actual fertility increased when age, age at first birth and woman’s educational level were entered after all the other variables ( $P<0.05$ ). Amongst the variables studied, age was the most effective one. For ideal fertility and fertility intention, in addition to age, age at first birth, and woman’s educational level, income level and attitude toward childbearing were also effective variables (Table 2).

According to the results of semi-partial correlations, effective variables were entered into multiple regression models to indicate the effect of each variable controlling other explanatory variables. In all three models, age and age at first birth showed the highest influence among the variables, respectively.

The effect of age on actual fertility was dramatically higher ( $\beta=0.654$ ) in comparison with ideal fertility and fertility intention ( $\beta=0.282$  and  $0.395$ , respectively). Age at first birth, as the second effective variable in the three model, was also more influential on actual fertility ( $\beta=-0.413$ ).

The model predicted the actual fertility of the studied women from age, age at first birth, women’s educational level, and contraceptive use. These variables statistically predicted actual fertility ( $P<0.00001$ ). All 7 variables added statistically to the prediction ( $P<0.05$ ). The determination coefficient for the actual fertility model ( $R^2=0.621$ ) showed that the independent variables explained 62.1% of the variance of actual fertility among the studied women and this is a strong relationship.

Age, age at first birth, level of women’s education, contraceptive use, and attitude toward childbearing were the variables that statistically predicted the ideal fertility, ( $P<0.00001$ ). All the 8 variables added to the prediction, ( $P<0.05$ ). The determination coefficient for the ideal fertility model ( $R^2=0.162$ ) showed the mentioned variables explained 16.2% of the variance of ideal fertility among the studied women and this is a moderate relationship.

Age, age at first birth, and women’s education were the variables that statistically predicted the fertility

Table 2: Partial and semi-partial correlations of actual and ideal fertility and fertility intention with independent variables

Variable	Actual fertility			Ideal fertility			Fertility intention		
	Partial	Semi-partial	P value	Partial	Semi-partial	P value	Partial	Semi-partial	P value
Age	0.4568	0.3270	0.000	0.0607	0.0545	0.000	0.143	0.120	0.000
Age at first marriage	-0.0004	-0.0002	0.473	-0.0006	-0.0005	0.393	-0.001	-0.001	0.320
Age at first birth	-0.1173	-0.0517	0.000	-0.0113	-0.0097	0.000	-0.026	-0.019	0.000
Educational level	-0.0181	-0.0072	0.000	-0.0075	-0.0064	0.001	-0.012	-0.009	0.001
Husband’s educational level	-0.0005	-0.0002	0.428	-0.0015	-0.0013	0.153	-0.001	-0.001	0.294
Income level	0.0009	0.0004	0.269	-0.0047	-0.0040	0.013	-0.003	-0.002	0.034
Social class	0.0004	0.0001	0.485	0.0000	0.0000	0.905	0.000	0.000	0.900
Attitude toward childbearing	0.0021	0.0008	0.093	0.0057	0.0048	0.006	0.005	0.004	0.008



intention ( $P < 0.00001$ ). All the mentioned variables added statistically to the prediction ( $P < 0.05$ ). The independent variables explained 27.5% of the variance of fertility intention among the studied women and this is a moderate relationship ( $R^2 = 0.275$ ) (Table 3).

### Discussion

The current study aimed to identify the determinants of actual fertility, ideal fertility, and fertility intention among rural women in Fars province, Iran. The means of actual fertility and ideal fertility were  $2.11 \pm 1.32$  and  $2.81 \pm 0.96$ , respectively, and the mean of fertility intention was  $2.92 \pm 1.00$ .

As age increased, actual fertility, ideal fertility, and fertility intention also increased. However, the ideal fertility of women who were older than 44 years was lower than their actual fertility. This result is in line with the population policies in effect after the Islamic Revolution and the war against Iraq, which led to a rise in fertility and the onset of a decline in fertility since 1988.<sup>23</sup> Unlike those women, ideal fertility and fertility intention for women younger than 30 years of age was lower and the same, respectively. The similarity represents fertility control in the younger generation that is reinforced by lower actual fertility among the younger generation. This gap is due to the young age, higher education, and social position of younger women. Although in recent decades the fertility rate has declined, the amount for the studied sample is somewhat higher than the total fertility rate in rural areas of Iran.

The use of contraceptive methods was effective in actual and ideal fertility. Women who had a low ideal fertility tend to use contraceptive methods more than others. This is consistent with Mpuga's findings that showed contraceptive use was related with fertility decline.<sup>24</sup>

The use of contraceptive methods was more common among women with more actual fertility. This is not in the same line with previous studies that showed a negative relationship between the variables.<sup>25</sup> This is due to the fact that the studied women with more children were older and probably used contraceptive methods to prevent future pregnancies. Moreover, women with greater ideal fertility reported a low rate of contraceptive use, which is rational. Contraceptive use was not significantly effective in fertility intention.

Almost all of the studied women had a positive attitude toward childbearing. One reason is the young average age of the women who were in the first half of their reproductive age. That is why this factor was merely effective in the ideal fertility model, which shows almost all of them wanted more children.

Ideal fertility and fertility intention were different according to gender preference, but the difference in actual fertility was not significant. This is consistent with previous results from 17 countries that showed gender preference affects reproductive behavior and fertility intention.<sup>26</sup>

Similar to previous findings, we found that age, age at first birth and woman's educational level were the most important variables with a unique effect on

**Table 3:** Results of multiple linear regression analysis on actual fertility, ideal fertility, and fertility intention.

Actual fertility	Coef.	Std. error	t	P> t	Beta	[95% Conf. Interval]
Age	0.114	0.003	34.32	0.000	0.654	0.107 0.121
Age at first birth	-0.107	0.007	-14.06	0.000	-0.413	-0.123 -0.093
Age at first marriage	-0.001	0.008	-0.18	0.859	-0.005	-0.017 0.015
Woman's educational level	-0.086	0.016	-5.17	0.000	-0.112	-0.118 -0.054
Husband's educational level	-0.013	0.017	-0.78	0.436	-0.016	-0.047 0.021
Social class	0.029	0.033	0.86	0.387	0.015	-0.037 0.094
Contraceptive use	-0.325	0.051	-6.55	0.000	-0.111	-0.422 -0.228
Ideal fertility						
Age	0.039	0.004	9.83	0.000	0.282	0.032 0.047
Age at first birth	-0.042	0.009	-4.56	0.000	-0.202	-0.061 -0.025
Age at first marriage	-0.006	0.009	-0.66	0.508	-0.029	-0.026 0.013
Woman's educational level	-0.53	0.020	-2.67	0.008	-0.087	-0.093 -0.014
Husband's educational level	-0.016	0.020	-0.79	0.428	-0.024	-0.056 0.024
Contraceptive use	0.238	0.060	4.00	0.000	0.101	0.122 0.356
Gender preference	-0.028	0.024	-0.13	0.900	-0.003	-0.467 0.411
Attitude toward childbearing	0.027	0.009	3.05	0.002	0.078	0.011 0.045
Fertility Intention						
Age	0.058	0.004	15.02	0.000	0.395	0.051 0.067
Age at first birth	-0.058	0.009	-6.47	0.000	-0.263	-0.076 -0.041
Age at first marriage	-0.007	0.009	-0.79	0.430	-0.032	-0.027 0.012
Woman's educational level	-0.078	0.019	-4.03	0.000	-0.120	-0.117 -0.040
Husband's educational level	-0.014	0.019	-0.71	0.475	-0.020	-0.052 0.025
Gender preference	-0.13	0.212	-0.62	0.536	-0.014	-0.547 0.285

the three dependent variables.<sup>14, 16, 27</sup> However, the income level and attitude toward childbearing were also effective predictors of ideal fertility and fertility intention. The partial and semi-partial correlations indicated that age at first marriage, husband's educational level, and social class explained the same part of the variance in the dependent variables which were virtually uncorrelated.

According to regression models, the determination coefficient for the actual fertility model showed that 62.1% of the variance in actual fertility was explained by age, age at first birth, woman's education, and use of contraceptive methods. For ideal fertility and fertility intention, about 16.2% and 27.5% of the variance was explained by the independent variables, respectively. The most effective determining factors among the variables were age and age at first birth, both of which being more effective in actual fertility, which is in line with previous studies.<sup>14, 17</sup> Women's education was another determinant of fertility. The rising levels of education increased the mean age at first marriage, which in turn led to a lower fertility rate. This result is in line with previous studies.<sup>15, 24, 28</sup> In accordance with previous findings,<sup>13</sup> age at first marriage and husband's educational level were negatively correlated with actual fertility, ideal fertility, and fertility intention; however, they were not determinant factors in multiple regression tests. A probable reason is that age at first birth is more important than that at first marriage.

Considering the importance of women's education, it could be concluded that rural women in Fars province play an important role in reproductive behavior and decision-making. Moreover, social class was only correlated with actual fertility. The results seem logical. Indeed, women in a higher social class preferred and had a low number of children. This is in accordance with the "value of children" theory.<sup>29</sup> Due to having a higher social position which is the consequence of a higher education, having more children was accompanied by a higher opportunity cost for these women.<sup>30</sup>

The strengths of this study were examining the actual and ideal fertility, and fertility intention simultaneously and comparing the factors affecting each of them. Regarding the low literacy of the respondents and the diversity of ethnicity and language, it was sometimes difficult for them to understand the content of some questions. To solve this problem, we used the questionnaires with the same language and ethnicity of the respondents. However, completing the questionnaire was somewhat difficult and took more time.

## Conclusion

We found that age, age at first birth and woman's educational level were the most important variables with

a unique effect on actual and ideal fertility and fertility intention of rural women in Fars province. The studied independent variables were more effective in explaining actual fertility than ideal fertility and fertility intention. Therefore, to better understand ideal fertility and fertility intention, we need to consider other factors in future studies.

Considering the increase in education and social position of younger women, the opportunity cost of having a child is more effective than ever. Therefore, fertility incentive policies could not be effective in increasing fertility, even in rural populations.

## Suggestions

As education increases and fertility declines to replacement level, the policies should be persuasive enough to be effective. In this context, policies on childbearing and contraceptive use are suggested to be based on informed choices of people. To make informed choices, people need to know about all aspects of fertility behavior to have access to a range of methods of family planning, and to have support for individual choice from social policies and community norms.

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## References

- 1 Bongaarts J. Fertility transitions in developing countries: Progress or stagnation? *Studies in family planning*. 2008;39 (2):105-10.
- 2 Zarei N, Ahmadi A. Nutrition Transition: An Intergenerational Comparison of Dietary Habits among Women of Shiraz. *Iranian journal of public health*. 2015;44 (2):269.
- 3 Mahdi Shirzad M. Fertility behaviour of Iranian women: A community-based, cross-sectional study. *Archives of Iranian medicine*. 2015;18 (1):2.
- 4 Hosseini-Chavoshi M, Abbasi-Shavazi MJ, McDonald P. Fertility, Marriage, and Family Planning in Iran: Implications for Future Policy. *Population Horizons*. 2016;13 (1):31-40.

- 5 Salehi-Isfahani D, Abbasi-Shavazi MJ, Hosseini-Chavoshi M. Family planning and fertility decline in rural Iran: the impact of rural health clinics. *Health Economics*. 2010;19 (S1):159-80.
- 6 Basten S, Gu B. Childbearing preferences, reform of family planning restrictions and the Low Fertility Trap in China. Oxford Centre for Population Research Working Paper; 2013.
- 7 Testa MR. On the positive correlation between education and fertility intentions in Europe: Individual- and country-level evidence. *Advances in life course research*. 2014;21:28-42.
- 8 Buber-Ennser I, Panova R, Dorbritz J. Fertility intentions of university graduates. *Demográfia English Edition*. 2013;56 (5):5-34.
- 9 Hagewen KJ, Morgan SP. Intended and ideal family size in the United States, 1970–2002. *Population and Development Review*. 2005;31 (3):507-27.
- 10 Asghar M, Murry B, Saraswathy KN. Fertility behaviour and effect of son preference among the Muslims of Manipur, India. *Journal of Anthropology*. 2014;2014.
- 11 Stichnoth H, Yeter M. Cultural influences on the fertility behaviour of first- and second-generation immigrants in Germany. 2013.
- 12 Dubuc S, editor Fertility by ethnic and religious groups in the UK, trends in a multi-cultural context. IUSSP International Population Conference; 2009.
- 13 Sahoo H. Fertility behaviour among adolescent in India. *J Fam Welf*. 2011;57 (1):22-33.
- 14 Ferré C. Age at first child: does education delay fertility timing? The case of Kenya. 2009.
- 15 Berrington A, Pattaro S. Educational differences in fertility desires, intentions and behaviour: A life course perspective. *Advances in life course research*. 2014;21:10-27.
- 16 Cygan-Rehm K, Maeder M. The effect of education on fertility: Evidence from a compulsory schooling reform. *Labour Economics*. 2013;25:35-48.
- 17 Mcallister L, Gurven M, Kaplan H, Stieglitz J. Why do women have more children than they want? Understanding differences in women's ideal and actual family size in a natural fertility population. *American Journal of Human Biology*. 2012;24 (6):786-99.
- 18 Angeles G, Guilkey DK, Mroz TA. The determinants of fertility in rural Peru: Program effects in the early years of the national family planning program. *Journal of Population Economics*. 2005;18 (2):367-89.
- 19 Khongji P. Determinants and trends of ideal family size in a matrilineal set-up. 2014.
- 20 Söderberg M, Christensson K, Lundgren I, Hildingsson I. Women's attitudes towards fertility and childbearing—A study based on a national sample of Swedish women validating the Attitudes to Fertility and Childbearing Scale (AFCS). *Sexual & Reproductive Healthcare*. 2015;6 (2):54-8.
- 21 Statistical center of Iran. report of population and housing census. 2016.
- 22 Testa MR. Childbearing preferences and family issues in Europe: evidence from the Eurobarometer 2006 survey. *Vienna Yearbook of Population Research*. 2007:357-79.
- 23 Abbasi MJ, Mehryar A, Jones G, McDonald P. Revolution, war and modernization: Population policy and fertility change in Iran. *Journal of Population Research*. 2002;19 (1):25-46.
- 24 Bbaale E, Mpuga P. Female education, contraceptive use, and fertility: evidence from Uganda. *Consilience-The Journal of Sustainable Development*. 2011;6 (1).
- 25 Feldman BS, Zaslavsky AM, Ezzati M, Peterson KE, Mitchell M. Contraceptive use, birth spacing, and autonomy: an analysis of the Oportunidades program in rural Mexico. *Studies in family planning*. 2009;40 (1):51-62.
- 26 Hank K, Kohler H-P. Gender preferences for children in Europe: Empirical results from 17 FFS countries. *Demographic research*. 2000;2.
- 27 Dommaraju P. Marriage and fertility dynamics in India. 2012.
- 28 Jalal Abbasi-Shavazi M, McDonald P. Fertility decline in the Islamic Republic of Iran: 1972–2000. *Asian Population Studies*. 2006;2 (3):217-37.
- 29 Friedman D, Hechter M, Kanazawa S. A theory of the value of children. *Demography*. 1994;31 (3):375-401.
- 30 Gauthier AH, Hatzius J. Family benefits and fertility: An econometric analysis. *Population studies*. 1997;51 (3):295-306.