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Title: Fertility Preferences of Women in a Province Center

Running Head: Fertility Preferences

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Abstract

Objective: Fertility preferences and status are important parameters involved in reproductive health. The aim of the present study was to define some characteristics of the fertility preferences of women aged 15–49 years in our region.

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Methods: This cross-sectional study was conducted between 2013 and 2015. The study population consisted of 627 married women aged 15–49 years living in a city center. A questionnaire about socio-demographic characteristics, pregnancy and birth traits, and fertility preferences was applied. Chi-square, Mann–Whitney U, and Spearman correlation tests were analyzed using SPSS 20.00 (2012 program; IBM, Armonk, NY, USA) software for statistical analyses. A p-value <0.05 was considered statistically significant.

Results: The mean age of the women participating in the survey was 33.03 ± 7.1 years. Median age at marriage was 20 years, mean age at first pregnancy was 21 years, and mean number of pregnancies was 3.07 years, with 14.6% having had more than five pregnancies and 34.6% having experienced previous miscarriages. The mean number of live births was 2.2, and 21.5% of women had waited 24 months between pregnancies. Additionally, 77.7% reported using family planning of any kind, with 62.1% using the modern method. Women's ages at first marriage varied significantly depending on education ($p < 0.001$) and working status ($p < 0.001$), whereas ages at first pregnancy varied significantly depending on educational status ($p < 0.001$). The total number of pregnancies varied significantly depending on level of education, working status, and family income ($p < 0.001$). Times between two pregnancies among women with histories of more than two pregnancies differed significantly depending on educational status ($p < 0.05$).

Conclusion: The most important factors in women's fertility preferences are education, work, and income. Increasing women's educational levels can lead to safe and healthy pregnancies and births.

Keywords: Pregnancy, Fertility, Reproductive health

Introduction

Fertility is a concept that reflects the reproductive experience of a society in terms of demography and health statistics and the number of live births in society in a given period, while expressing the ability to reproduce among the population. Fertility levels and preferences vary widely between different parts of the world. Factors affecting these include age and gender equality, socio-economic structure, educational levels, belief systems, the presentation and accessibility of health services, marriage, perspectives toward having children, women's employment, contraceptive use and effectiveness, the geographical area where the individual lives, age at menarche, age at first

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experience of sexual intercourse, couples' infertility status, and population policies [1–3]. Population and health surveys from Turkey also show that women's fertility behaviors vary significantly depending on settlement area, region, educational status, and the prosperity of the household [4].

Excessive fertility and rapid population growth lead to an increase in maternal and pediatric diseases and mortality, as well as creating an important public health problem by contributing to increased consumption; environmental pollution; inequalities in education, health, and employment; and distortions in urbanization [5]. Having children at an early age represents an obstacle to the development of women in terms of education and social and economic life, as well as creating a risk of mortality in mothers and increased risks of morbidity and mortality in children [6]. A total of 40–60 million miscarriages are estimated to occur annually worldwide, and 13% of maternal mortality is due to miscarriage complications [7]. There is also a direct relationship between a woman's status and reproductive health, with a woman's ability to control her own fertility raising her status [8].

The purpose of the present study was to define various characteristics of the fertility preferences of married women aged 15–49 years living in the city of Erzurum in the province of Erzurum, Turkey.

Methods

This descriptive cross-sectional study was conducted between February 2013 and April 2015 in the city center of Erzurum. The study population consisted of 109 669 women aged 15–49 years in the city center in 2013. According to the Turkey Demographic and Health Survey (TDHS) 2008 data, the level of family planning use in the Eastern region of the country (both modern and traditional methods) was 61.4% [9]. An optimum sample number of 627 was calculated based on a deviation level of 5% and a confidence interval of 99%.

A questionnaire consisting of 53 questions about socio-demographic characteristics, pregnancy and birth traits, and fertility preferences was applied using the face-to-face interview technique. The questionnaire was first applied to 40 women as a preliminary test, after which any requisite adjustments were made, and the final form of the questionnaire was confirmed.

Approval was obtained from the Atatürk University Faculty of Medicine Clinical Research Ethics Committee before the start of the study. The study was carried out according to ethical principles.

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Participation in the survey was voluntary. Written informed consent was obtained from all women who agreed to participate.

Statistical analysis

Data were analyzed using SPSS version 20.00 (2012; IBM, Armonk, NY, USA) software for statistical analyses. Descriptive statistics are presented as percent, mean, median, and standard deviation. Chi-square, Mann–Whitney U, and Spearman correlation tests were used in data analysis. A p-value <0.05 was considered statistically significant.

Results

The mean age of the women in the survey was 33.03 ± 7.1 years; 81.2% were housewives, and 32.1% of their spouses were public employees. In addition, 45.1% of women and 19.1% of their spouses were educated at primary level or lower, whereas 17.7% of women and 34.1% of their spouses were university graduates. Of the women, 77.8% lived in nuclear families, and 56.8% had families of four members or fewer. Finally, 30.8% of families had income levels of 1001 Turkish Lira (TL) or less, 99.7% of women were in officially recognized marriages, and 12.9% of marriages were consanguineous (Table 1).

In the present study, no illness was observed in 79.4% of women, whereas 20.6% had a disease requiring continuous drug use. Additionally, 15.6% of women were smokers (Table 1).

Median age at marriage was 20 years, and median age at first pregnancy was 21 years, and 94.1% of all women had experienced at least one pregnancy. The mean number of pregnancies was 3.07, with 14.6% of women having five or more pregnancies, and 34.6% experiencing miscarriages. The mean number of live births was 2.2, and the mean number of living children was 2.2. Additionally, the period between two pregnancies was <24 months in 21.5% of cases (Table 2).

Overall, 40% of subjects described three as the ideal number of children, and 97.6% thought at least 2 years should elapse between two pregnancies. In addition, 81.9% thought that breastfeeding would not prevent pregnancy.

In total, 40 women were excluded from the analysis regarding family planning use, whereas 77.7% of the remaining 587 participants stated that they used family planning of any kind. Among those who used family planning, 61.1% used modern methods (Table 3). The intrauterine device

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(IUD) (25.4%) was the most common modern method, and withdrawal was the most commonly used traditional method (35.5%) (Table 4). The most important criteria for family planning method preferences were reliability (58.5%) and having the fewest side effects (35.6%). Of the women using modern family planning techniques, 72.4% used methods provided by health facilities. Additionally, 40.9% of those who did not use family planning attributed this to the fact that they were already pregnant.

Of the women, 12.1% were pregnant, and 13.2% of these pregnancies were unwanted.

Mean age at first marriage differed significantly depending on education ($p < 0.001$) and working status ($p < 0.001$). A moderately significant positive correlation was observed between age at first marriage and educational status ($r = 0.34$, $p < 0.001$).

Mean age at first pregnancy varied significantly depending on educational attainment ($p < 0.001$). Among women who had their first pregnancies under the age of 20 years, the highest rate was observed among women who were educated at primary level or below (36.7%), whereas the lowest rate was determined among university graduates (4.4%).

Mean total numbers of pregnancies differed significantly depending on educational attainment, working status, and family income ($p < 0.001$) (Table 5). There were an intermediate negative correlation between the total number of pregnancies and educational attainment ($r = -0.32$, $p < 0.001$) and a weak negative correlation between the total number of pregnancies and income ($r = -0.15$, $p < 0.001$).

Mean numbers of live births differed significantly depending on age ($p < 0.001$), educational attainment ($p < 0.001$), income ($p < 0.001$), and working status ($p < 0.001$). In terms of distributions of live birth numbers, one live birth predominated among women with an age at first marriage of 30 years (56.3%), and three live births among women aged below 20 years at first marriage (56.6%). A significant negative correlation between numbers of live births and educational status ($r = -0.29$) and family income ($r = -0.12$, $p < 0.001$) was found.

Miscarriage rates differed significantly between age groups ($p < 0.001$) and in terms of total number of pregnancies ($p < 0.001$). A positive weak significant correlation was observed between age groups and miscarriage ($r = 0.24$), and positive and intermediate significant correlation between age

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groups and total number of pregnancies ($r = 0.47$). No significant association between miscarriages and education or working status was found.

Numbers of stillbirths differed significantly depending on age group ($p < 0.05$), educational level ($p < 0.05$), family income level ($p < 0.05$), and working status ($p < 0.05$). The highest levels of stillbirths within the different subgroups were observed among subjects aged 35 years or over (20.8%), those with primary education or lower levels (18.6%), those with a family income of 1000 TL or less (22.2%), and in the non-employed group.

The times between two pregnancies differed significantly depending on educational status among women with more than one pregnancy ($p < 0.05$); those with a gestational age below 2 years were the highest in middle school graduates (31.9%).

Income levels differed significantly depending on mode of termination of unwanted pregnancies ($p < 0.05$). While 86.5% of women with an income of 1000 TL or less thought that unintended pregnancies should not be terminated, the corresponding figure was 94.3% in the 1001–3000 TL group and 91.9% in the over 3001 TL group. Modes of termination of unwanted pregnancies did not differ significantly in terms of educational attainment or numbers of live births.

Opinions regarding the ideal numbers of children differed significantly depending on women's educational levels ($p < 0.05$), with a weak negative correlation being observed ($r = -0.15$, $p < 0.05$).

In terms of abortion, 24.9% of subjects reported having undergone these procedures, and 89.6% of which were medically induced. While there was no significant difference between educational level groups in terms of abortion history, women educated at primary level or below exhibited the highest rate of abortions (29%). A significant difference was also observed in terms of spouses' educational levels ($p < 0.05$), with the highest incidence of abortion being determined among women with spouses educated at primary level or below (31.1%). The highest level of women thinking that abortion should not be used as a method of family planning was observed among university graduates (98.2%), with significant differences being determined between the groups ($p < 0.05$).

Discussion

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We observed a significant relationship between educational attainment and working status and age at first marriage. Age at first marriage increased in relation with educational attainment, and age at marriage was also higher among working women. The TDHS 2013 report observed that age at marriage increased with educational levels in some rural studies, with the results being compatible with our study [4,10–13].

A time-dependent increase was observed in ages at first pregnancy for our region [10]. A significant relationship was determined between educational status and age at first pregnancy in our study. This age was higher among high school and college graduates. Our results are compatible with the TDHS 2013 report and studies by Gaziantep and İzmir Bayraklı [4,12,14].

The total number of pregnancies in our region has decreased over time in recent years. Our findings are compatible with the TDHS 2013 report that cited a total fertility rate of 3.4 for the eastern region of Turkey and that noted a fertility rate higher in rural areas [15,16]. The total number of pregnancies in our study decreased as education and income levels increased and was also low among working women. Previous studies conducted by Gaziantep and Isparta are compatible with our findings [12,17].

In a study conducted in a rural area of our region in 1992, the mean live birth rate was 4.9 [10]. There has been a gradual decrease in the number of live births. In our study, live birth rates decreased as age at marriage, educational attainment, and income increased, and live birth rates were higher among women who did not work. Our findings are similar to national and international studies [12,17–20], showing that fertility declines as women's educational levels increase.

A period of at least 2 years between pregnancies was more common among women educated at primary or secondary level than in subjects educated at higher levels. This may be explained by the fact that marriage occurs at more advanced ages among subjects educated at high school level or above and to these women desiring more frequent pregnancies. In one study conducted in our rural area, an interval of <24 months between two pregnancies was determined in 83% of women [10]. The higher rate may derive from a lower level of education compared with our study, a lack of qualified family planning practitioners in rural areas, and socio-cultural differences varying over time.

In total, 12% of women in our study were pregnant, with 13.2% of these pregnancies being unwanted. The idea of terminating unwanted pregnancies through abortion was more common

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among women with low incomes than in other income groups. A similar relationship between income and mode of termination of unwanted pregnancies has been reported by Gaziantep [12].

The mean ideal number of children in the study group was 2.9, with 40% of women reporting an ideal number of 3. Lower numbers have been reported in studies from the western and northern parts of Turkey [21,22]. This may be due to the variations in population policies over time and to a low level of education. In our study, the ideal number of children decreased as educational levels increased; this was in agreement with other studies from our region [10].

The use of modern methods has gradually increased in our region [10]. Studies from Turkey have reported higher rates of use of modern methods than those of our study and lower rates of traditional method use [10,14,15,17,23]. The levels of use of modern and traditional methods in our study were higher than the TDHS 2013 data from our region [4]. This difference may be attributed to our study being performed in a city center. Previous studies have shown high use of IUD and condom in Turkey [12,15,17]. Some form of family planning is used worldwide at a level of 63%, with 57% of the methods employed being modern. The corresponding figures are 70% and 61%, respectively, in developed countries and 62% and 56.4%, respectively, in developing countries [24]. In terms of method preferences, tubal ligation and IUD are most commonly used in Asia, whereas oral contraceptives, condoms, and injection methods are preferred in Europe and Asia [24]. In Turkey, contraceptive equipment is distributed free of charge to family planning clinics and family doctors under the national health policy. IUD and condom are issued in this context, which may explain the high level of use.

Reasons for not using family planning in our study included already being pregnant, a desire to become pregnant, and side effects associated with contraception. According to the TDHS 2013, not using family planning is significantly associated with infertility, whereas the reasons for not using family planning in other studies from Turkey were very similar to those identified in our own study [4,25]. The most important reasons cited in international studies include a lack of information about side effects, a lack of information regarding fertility-related causes and methods, and a desire to be pregnant [26,27]. Differences between countries may be attributed to educational levels, availability of family planning services, and government policies.

Levels of use of family planning methods in the present study were higher if a method is reliable, and if it involves fewer side effects. The women in our study preferred the IUD method

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because it is reliable and free of charge and condom use because it is easily available and has few side effects. In agreement with our findings, other studies from Turkey have shown that the family planning methods that women use are mostly reliable, easy to use, and with few side effects [12,15,22,25]. Oral contraceptives are popular in international studies because they are effective, reversible, and reduce menstrual problems, whereas injection and implant methods are long-acting and do not require daily use, and condoms are commonly used because they are easy to use and protect against sexually transmitted diseases [28].

Relationships were observed in our study between spouses' educational levels, total numbers of pregnancies, and abortion status. Higher abortion levels were determined among women whose spouses were educated at middle school or below and in women with higher numbers of pregnancies. However, women's educational attainment, income, working status, and family type did not affect abortion status. According to the TDHS 2013 data, deliberate miscarriage levels decrease in relation with numbers of living children and as living conditions improve; however, there is no relationship between educational levels and deliberate miscarriage [4]. Studies from Trabzon and Istanbul have reported that abortion and deliberate miscarriage decrease as educational levels increase [13,21]. Gaziantep reported that abortion rates increase in line with numbers of live births [12]. Studies from Nepal have shown that abortion rates are high when women have high numbers of pregnancies and low levels of education [29]. Our results were similar to those from previous Turkish and international studies.

The level of rejecting curettage as a family planning method was highest among college graduates. Similarly, Afyon and Kocatepe reported that 79% of subjects do not regard abortion as a family planning method, with the level being higher among women with higher educational levels [30].

Our study is important for the region where it was carried out in terms of being performed in the city center, in a province that may be representative of the entire Eastern Anatolia region. However, only married women living in the city center were included, and the results cannot be generalized to the whole region. Our study was designed as a questionnaire survey investigation of how socio-demographic factors, fertility histories, and family planning use among women affect their fertility preferences. A qualitative study design based on women's knowledge, attitudes, and behavior in terms of fertility preferences might elicit a better understanding of the factors involved.

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Conclusion

The results of our study show that the most important factors for women's fertility preferences and protection from risky pregnancies are education, work, and income. Therefore, risks and unwanted pregnancies in society can be avoided by raising women's educational attainments and increasing the use of modern family planning methods. In addition, women need to be educated before marriage and before, during, and after pregnancy by expanding and maintaining existing reproductive health education programs.

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Tables

Table 1. Socio-demographic characteristics of participants.

	n	*%
Age (years)		
15–19	9	1.4
20–24	63	10.0
25–29	137	21.9
30–34	168	26.8
35–39	125	19.9
40–44	79	12.6
45–49	46	7.3
Educational status of women		
Primary school or below	283	45.1
Middle school	95	15.2
High school	138	22.0
University	111	17.7
Educational status of spouses		
Primary school or below	120	19.1
Middle school	90	14.4
High school	203	32.4
University	214	34.1
Family type		
Nuclear family	488	77.8
Extended family	139	22.2

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Number of people in the family		
4 or less	356	56.8
5 or more	271	43.2
Income status		
1000 TL or below	193	30.8
1001–3000 TL	335	53.4
3001–5000 TL	71	11.3
5001 TL or above	28	4.5
Consanguineous marriage		
Yes	81	12.9
No	546	87.1
Disease status		
Presence of disease	129	20.6
No disease	498	79.4
Smoking status		
Smoker	98	15.6
Non-smoker	529	84.4
Total	627	100.0

*Column percentage.

TL, Turkish Lira.

Table 2. Fertility characteristics and preferences of participants.

Fertility characteristics	n	*%	Mean
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Total number of pregnancies		3.07
0	37	5.9
1	97	15.5
2	167	26.6
3	137	21.9
4	96	15.3
5 or more	93	14.8
Total	627	100.0
Number of live births		2.29
0	23	3.9
1	127	21.5
2	205	34.7
3	160	27.1
4	60	8.5
5 or more	25	4.2
Total	590*	100
Number of stillbirths		
0	497	84.2
1	73	12.4
2 or more	20	3.4
Total	590*	100
Number of miscarriage		
0	386	65.4
1	144	24.4
2 or more	60	10.2
Total	590*	100
Living child		2.27
0	26	4.4
1	127	21.5
2	205	34.7

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3	159	26.9
4	49	8.3
5 or more	24	4.1
Total	590**	100
Time between last two pregnancies		
>24 months	94	21.5
<24 months	343	78.5
Total	437***	100.0
Ideal number of children		
2 or less	218	34.8
3	251	40.0
4 or more	158	25.2
Total	627	100.0
How many years should elapse between two births		
>2 years	15	2.4
<2 years	612	97.6
Total	627	100.0

*Column percentage.

**Women with no history of pregnancy were not included.

***Women with fewer than two pregnancies were not included.

Table 3. Family planning methods employed.

FP method use	n	*%
Modern method users	283	48.2
Traditional method users	173	29.5
Not using any method	131	22.3

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Total	587	100.0
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*Column percentage.

FP, family planning.

Table 4. Distributions of family planning methods used.

FP method	n	*%	*Column percentage.
Oral contraceptive	21	4.6	
Condom	114	25.0	
Injection	3	0.7	
IUD**	116	25.4	**IUD: intrauterine device.
Subcutaneous implant	0	0.0	
Spermicides	1	0.2	
Withdrawal	162	35.5	
Breastfeeding	7	1.5	
Calendar method	3	0.7	FP, family planning.
Vaginal douching	1	0.2	
Tubal ligation	28	6.1	
Vasectomy	0	0.0	
Total	456	100.0	

Table 5. Total pregnancy numbers by age groups, educational level, income, and working status.

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	0		1		2		3 or more		Total	Statistics
	n	*%	n	*%	n	*%	n	*%	n	*%
Age groups										
15–24	7	9.7	35	48.6	21	29.2	9	12.5	72	100
25–34	25	8.2	55	18.0	104	34.1	121	39.7	305	100
35 and older	5	2.0	7	2.8	42	16.8	196	78.4	250	100
										$\chi^2 = 168.969$ $p < 0.001$
Educational status										
Primary school and below	4	1.4	23	8.1	74	26.2	182	64.3	283	100
Middle school	2	2.1	12	12.6	26	27.4	55	57.9	95	100
High school	10	7.2	34	24.6	38	27.5	56	40.6	138	100
University	21	18.9	28	25.2	29	26.1	33	29.7	111	100
										$\chi^2 = 91.991$ $p < 0.001$
Income status										
1000 TL or less	8	4.1	20	10.4	58	30.1	107	55.4	193	100
1001–3000 TL	16	4.8	52	15.5	80	23.9	187	55.8	335	100
3001 TL or more	13	13.1	25	25.3	29	29.3	32	32.3	99	100
										$\chi^2 = 30.691$ $p < 0.001$
Working status										
Working	20	16.9	33	28.0	34	28.8	31	26.3	118	100
Not working	17	3.3	64	12.6	133	26.1	295	58.0	509	100
Total	37	5.9	97	15.5	167	26.6	326	52.0	627	100

*Column percentage.

TL, Turkish Lira.

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