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Delivery preferences of pregnant women: Do not underestimate the effect of friends and relatives



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ABSTRACT

Introduction: The mode of delivery is of vital importance to the health of both mother and child. We aimed to determine the preferences of pregnant women for the mode of delivery and the associated factors concerning their choices.

Methods: In this descriptive study, a sample size of 418 individuals are needed to calculate an expected prevalence of 45% with an error of margin of 5%, a confidence interval of 95% and considering potential non-respondents of 10%. Sixteen subjects refused to take part in the study, 402 pregnant women presenting to hospitals in Erzurum city center during December 2016 and January 2017 consisted the study group. Distribution percentages were calculated based on the numbers of births in the hospitals. A questionnaire including questions about sociodemographic characteristics, factors that may affect women's delivery preferences, delivery preferences, and the reasons for those preferences was used to collect the data. Data were analyzed on the SPSS 22.0 statistical software. The Chi-Square, Student t-tests and binary logistic regression analysis were used. $p < 0.05$ was regarded as statistically significant.

Results: The proportion of cesarean delivery preferences was 69 (17.2%). Women's preferences for normal vaginal delivery (NVD) or CS deliveries were significantly affected by the previous type of delivery ($p < 0.001$), type of pregnancy (natural vs. assisted) ($p = 0.021$) and problems in CS delivery among friends and relatives ($p = 0.009$). No statistically significant correlation was observed between delivery preferences and women's age, monthly family income, employment status, age at marriage, duration of the marriage, previous miscarriage, age at first delivery, and possession of information concerning types of delivery ($p > 0.05$). Multivariate analysis proved cesarean section experience, the presence of cesarean-related problems among relatives and educational status as independent affecting factors.

Conclusion: This investigation demonstrated women in Erzurum prefer substantially vaginal delivery. Family and relatives are essential for decision making, which suggests considering peer education as a method of information delivery.

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Background

The birth process can expose women to many risks during pregnancy, delivery, and the postpartum period [1]. One important decision during this process is the mode of delivery. The choice of delivery route is of great importance to the health of the mother as well as the child [3]. This decision must be made by closely evaluating the mother and fetus throughout the pregnancy. The decision-making process can be affected by several factors [2].

Vaginal deliveries occur with as little intervention as possible and are the ideal mode for the female physiological structure [3].

However, vaginal delivery is not possible in conditions such as head-pelvis incompatibility, presentation disorders, fetal distress, dystocia, or a large baby, in which cases vaginal delivery may be risky for the mother or baby. In that case, the baby must be born by the cesarean route [4,5].

In medical terms, in selected cases with proper indications, cesarean delivery can effectively prevent some maternal and perinatal morbidity and mortality. However, as in any surgical procedure, there are various short- and long-term risks with the cesarean delivery that can persist for years after and affect the woman's as well as the child's health and future pregnancies. These risks are higher in women with limited access to comprehensive obstetric departments [6].

The provision of obstetric care has become increasingly patient-focused, and more attention has been paid to the patient's opinions in recent years. On the other hand, ethical debates concerning

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elective cesarean delivery are still ongoing [7]. Cesarean deliveries performed at the mother's request represent 4–18% of all cesareans and 14–22% of elective cesareans [8]. The International Federation of Gynecology and Obstetrics (FIGO) states that cesareans should be performed for medical reasons, not out of preference. Considering the heavy burden that non-medical cesareans place on the health of the mother and baby, cesareans should be avoided other than when indicated [9].

The World Health Organization (WHO) advised that the proportion of cesarean deliveries should remain between 10% and 15%. However, cesarean rates continued to grow, in both developed and developing countries [7]. According to the Turkish Demographic and Health Survey (TDHS), the cesarean delivery level was 21.2% in 2003, rising to 36.7% in 2008 and 48% in 2013 [10,11]. Both local and international authorities and political bodies are seeking to understand the causes of rising cesarean deliveries and to looking for means to lower this orientation.

The purpose of this study was to determine the delivery preferences and related factors of pregnant women presenting to hospitals in the Erzurum city center.

Materials and methods

The purpose of this cross-sectional, descriptive study was to determine the delivery preferences and associated factors among pregnant women presenting to hospitals in the Erzurum city center between December 2016 and May 2017.

The research population consisted of all pregnant women in the Erzurum city center. A sample size of 380 individuals are needed to calculate an expected prevalence of 45% with an error of margin of 5% and a confidence interval of 95%. Considering potential non-respondents, the sample size was increased by 10%, giving a target sample of 418 women. Pregnant women who applied to the gynecology outpatient clinics of the hospitals regardless of gestational week were included in the study. Pregnancies with near miss and requiring urgent intervention during the outpatient clinic were excluded from the study. Distribution percentages were calculated based on the numbers of births in hospitals in the city center, and a stratified sample model was applied according to births in each hospital. During the time of the study, there were three hospitals in the provincial center providing obstetric services (one university, one state, and one private hospital). Sixteen subjects refused to take part in the study. Data for 402 pregnant women were analyzed.

The data collection questionnaire consisted of 26 multiple choice items prepared by researchers after literature search. The first part of the questionnaire inquired into sociodemographic characteristics (age, place of residence, educational level, employment status, monthly family income, and age at marriage) (8 items), while the second part was prepared on the basis of a literature search and inquired into factors that may affect women's delivery preferences (age at first delivery, number of pregnancies, number of miscarriages, the presence of assisted fertilization, whether the delivery was scheduled, decision giver of the type of delivery, and experience of birth-related complications among friends or relatives), whether subjects had received any information about types of delivery before giving birth, delivery preferences, and the reasons for those preferences ([18] items). The questionnaire was applied face-to-face by the researchers and lasted approximately 20 min. Written consent forms were received from all pregnant women agreeing to participate.

Data were analyzed on the SPSS 22.0 statistical software. Descriptive analyses were expressed as mean, percentage, and standard deviations. The Chi-Square, Student t-tests and binary logistic regression analysis were used in the analysis of factors that

might affect delivery preferences. $p < 0.05$ was regarded as statistically significant.

Ethical approval was obtained from the Atatürk University Clinical Research Ethical Committee (Session No. 7, Decision No. 01 date: 08.12.2016). The study was conducted under the principles of the Declaration of Helsinki.

Results

The mean age, mean age at first marriage and mean age at first delivery were 27.95 ± 5.61 years (range: 16–44), 21.71 ± 4.21 (range: 14–36), and 22.02 ± 3.88 (range: 15–34), respectively. Of the women, 261 (64.9%) lived in an urban area, 249 (61.9%) presented to the state hospital, 108 (26.9%) to the private hospital and 45 (11.2%) to the university hospital. In addition, 65 (6.2%) of subjects had married before the age of 18, 119 (29.6%) were primary school graduates, and 342 (85.1%) were not working. The family income of 96 (23.9%) of the women was below the minimum wage (1404 Turkish lira [12]). Other descriptive characteristics are shown in Table 1.

Analysis showed that 117 (29.1%) of the women in the study were primiparous, while 125 (31.1%) had previously miscarried. Of the participants, 102 (28.9%) had not yet planned their deliveries, and 125 (43.7%) of those who had a plan was intending to have cesarean deliveries. Planned pregnancies were determined in 300

Table 1
Distribution of selected sociodemographic characteristics of participants.

	n	%
Age groups (years)		
19 and below	24	6.0
20-29	229	57.0
30-39	141	35.0
40 and above	8	2.0
Place of residence		
Urban	261	64.9
Rural	141	35.1
Educational level		
Illiterate	27	6.7
Literate	12	3.0
Primary school graduate	119	29.6
Middle school graduate	80	19.9
High school graduate	67	16.7
College-university graduate	97	24.1
Employment status		
Working	60	14.9
Not working	342	85.1
Family monthly income		
Below minimum wage (1404 TL)	96	23.9
Minimum wage (1404) to 2000 TL	160	39.8
2001- 3000 TL	59	14.7
3001- 4000 TL	27	6.7
4001 TL or more	60	14.9
Age at marriage		
< 18	65	16.2
≥ 18	337	83.8
Number of living children		
0	145	36.0
1	112	27.9
2	82	20.4
3 or more	63	15.7
Length of marriage		
1-5 years	224	55.7
6-10 years	91	22.6
11 years and above	87	21.7

(74.6%), and 23 (5.7%) of women had become pregnant through infertility treatment (hormone therapy 17 (4.2%), intrauterine insemination 3 (0.7%), and in vitro fertilization 3 (0.7%).

Of the women in our study, 160 (39.8%) received information about types of delivery from at least one health professional (family doctor, obstetrician, midwife/nurse), while 126 (31.3%) had been given no information. Information was given to women about delivery most frequently by obstetricians (27.6%, n = 111) (Fig. 1).

When women were asked about their delivery preferences in the absence of any compelling factors, 333 (82.8%) said they preferred vaginal delivery. On the other hand, 149/161 (92.5%) of women scheduled for vaginal deliveries, 84/125 (67.2%) of those scheduled for cesareans, and 100/116 (86.2%) of those whose deliveries had not yet been scheduled, reported preferring a vaginal delivery.

The most common reasons for preferring vaginal delivery among the 161 women (40%) scheduled for vaginal birth were the thoughts that it is healthier for the mother (60.2%, n=97), the recovery would be easier and faster (55.9%, n=90) and it is healthier for the baby (54.6%, n = 88) (Fig. 2).

The most common reasons for preferring cesarean deliveries among the 125 women (31.0%) scheduled for cesareans were physician advice/medical indication (85.6%, n = 107) and fear of giving birth/birth pains (16.8%, n = 21) (Fig. 3).

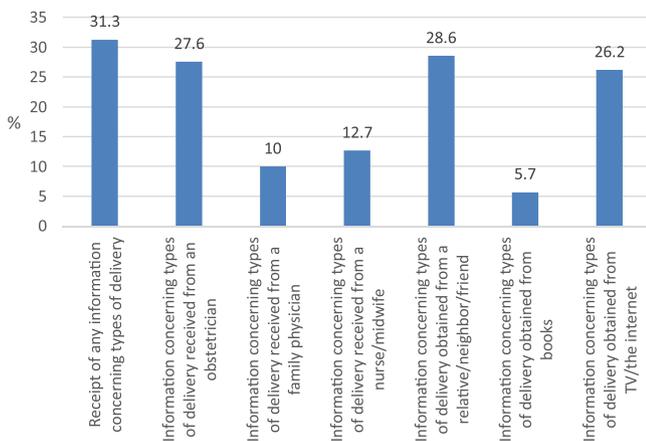


Fig. 1. Sources of information concerning types of delivery *. (*): More than one answer was given to the question concerned; percentages were calculated on the basis of number of responses given.

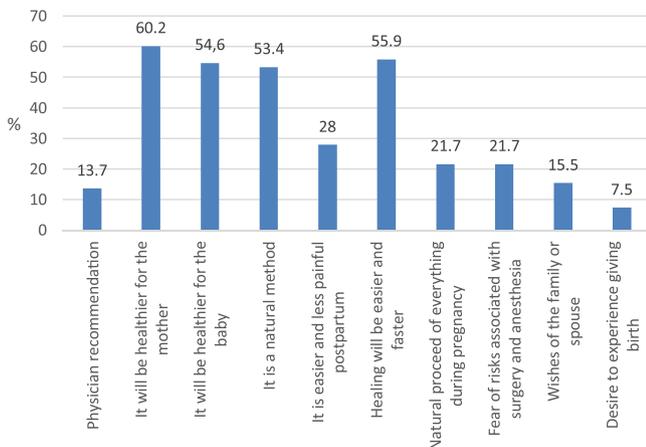


Fig. 2. Reasons for preferences among women scheduled for vaginal deliveries *. (*): More than one answer was given to the question concerned; percentages were calculated on the basis of number of responses given.

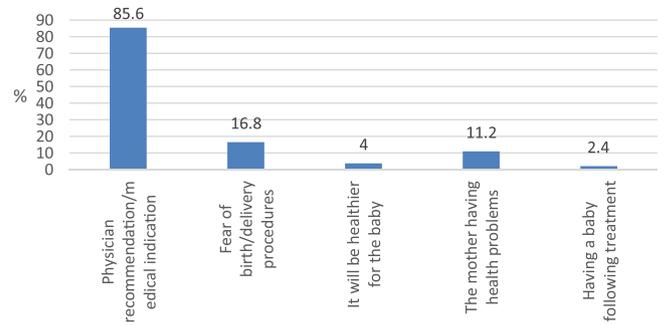


Fig. 3. Reasons for preference among women scheduled for cesarean delivery *. (*): More than one answer was given to the question concerned; percentages were calculated on the basis of number of responses given.

Our findings showed that 270 (67.2%) of the women agreed with the scheduled delivery types.

There was a significant difference between delivery preferences and the education level of women and the difference was due to the high school graduate group ($\chi^2=9.384$, $p=0.025$) (Table 2).

The findings also showed that 101/117 (86.3%) of primiparous women vs. 232/285 (81.4%) of multiparous women ($\chi^2=1.413$, $p=0.235$), 146/164 (89.0%) of women who had their last delivery via the vaginal route, and 65/98 (66.3%) of those who had their last delivery via cesarean section preferred a vaginal delivery in the absence of any compelling factors ($\chi^2=20.160$, $p<0.001$). Vaginal delivery was also preferred by 267/318 (83.9%) of women who became pregnant by natural methods and 15 (65.2%) of those receiving fertility treatment. The level of preference for vaginal delivery among women with friends or relatives who had experienced birth problems during cesarean delivery was 55 (94.8%). Women’s preferences for vaginal or cesarean deliveries were significantly affected by the previous type of delivery ($p<0.001$), the way of becoming pregnant ($p=0.040$) and problems in cesarean delivery among friends and relatives ($p=0.009$) (Table 2).

The mean age of the participants preferring cesarean section was significantly higher than those preferring normal vaginal delivery (29.19 ± 5.82 vs. 27.69 ± 5.53 , $t=-2.030$, $p=0.043$).

Our findings showed that 47 (60.3%) of women presenting to the private hospital with scheduled modes of delivery, 108 (60.7%) of those presenting to the public hospital, and 6 (20.0%) of those presenting to the university hospital were planning vaginal deliveries. There was a significant difference between the planned forms of delivery and the referred hospitals ($\chi^2=17.947$, $p<0.001$). However, there was no relationship between referral hospitals and personal delivery preferences of women ($\chi^2=2.086$, $p=0.352$).

Also, no statistically significant relationship was observed between the delivery preferences and women’s age, monthly family income, employment status, age at and length of the marriage, previous miscarriage, age at first birth, and possession of information concerning types of deliveries ($p>0.05$).

A logistic regression model was built to look for factors independently affecting the delivery preferences of women, considering possible confounders. Variables entered into the model were age (years), educational level (illiterate/literate - middle school/high school/ degree-associate degree), type of pregnancy (natural/infertility treatment), type of last delivery (normal vaginal/cesarean), and presence of relatives/friends experiencing problems after cesarean section (yes/no). Having a cesarean section at the last delivery was positively associated with cesarean section preference (Wald = 13.568; OR = 3.6, 95% CI: 1.8–7.1; $p<0.001$), while presence of cesarean-related problems among relatives (Wald = 4.911; OR = 10.0, 95% CI: 1.3–77.1; $p=0.027$) and educational status (literate

Table 2
Distribution of selected sociodemographic factors and other factors associated with women's delivery preferences.

	Delivery preference in the absence of compelling factors				χ^2 , p
	Vaginal		Cesarean		
	n	%	n	%	
Age group (years)					
19 and below	20	83.3	4	6.7	1.076, 0.783
20–29	193	84.3	36	5.7	
30 and above	120	80.5	29	19.5	
Place of residence					
Urban	218	83.5	43	16.5	0.249, 0.618
Rural	115	81.6	26	18.4	
Educational level					
Illiterate	24	88.9	3	11.1	9.384, 0.025
Literate - middle sch.	180	85.3	31	14.7	
High school	47	94.0	3	6.0	
Degree/associate	82	84.5	15	15.5	
Employment status					
Working	47	78.3	13	21.7	1.006, 0.316
Not working	286	83.6	56	16.4	
Type of pregnancy					
Natural	318	83.9	61	16.1	5.326, 0.040*
Infertility treatment	15	65.2	8	44.8	
Type of last delivery					
Vaginal	146	89.0	18	11.0	20.160, <0.001
Cesarean	65	66.3	33	33.7	
Any previous information concerning types of delivery?					
Yes	108	85.7	18	14.3	1.069, 0.301
No	225	81.5	51	18.5	
Problems following vaginal birth among relatives					
Yes	27	90.0	3	10.0	1.170, 0.279
No	306	82.3	66	17.7	
Problems following cesarean delivery among relatives					
Yes	55	94.8	3	5.2	6.855, 0.009
No	278	80.8	66	19.2	

* Based on Fisher's Exact Test.

thru middle school vs. illiterate Wald = 4.130; OR = 2.4, 95% CI: 1.0–5.5; p = 0.042) demonstrated a negative impact (Table 3).

Discussion

In this study, we aimed to determine the delivery preferences and related factors of pregnant women presenting to hospitals in the Erzurum city center and found that %17.2 of the women prefer a cesarean delivery. A previous study from the same province in 2011

determined a 21.2% preference for cesarean delivery [13]. Cesarean preference levels of 13–15% have been cited by other studies from Turkey [14–16].

In their meta-analysis, Mazzone et al. [17] evaluated 38 studies from different countries by scanning the MEDLINE, EMBASE, LILACS and PsycINFO electronic databases and calculated a cesarean delivery preference level of 15.6%.

Scheduled cesarean delivery in our study is similar to the level reported in the 2013 Turkish Demographic Health Survey (TDHS)

Table 3
Logistic regression model for factors affecting the delivery preferences of women.

	B	S.E.	Wald	p	Exp(B)	95% C.I. for EXP(B)	
						Lower	Upper
Age	0.045	0.035	1.697	0.193	1.046	0.978	1.119
Type of last delivery	1.284	0.349	13.568	0.000	3.612	1.824	7.155
Type of last pregnancy	0.446	0.734	0.370	0.543	1.563	0.371	6.586
Relatives exp.	−2.306	1.041	4.911	0.027	0.100	0.013	0.766
Education			5.534	0.137			
Education (1)	−0.876	0.431	4.130	0.042	0.417	0.179	0.969
Education (2)	−0.821	0.742	1.223	0.269	0.440	0.103	1.885
Education (3)	−0.125	0.563	0.050	0.824	0.882	0.293	2.660
Constant	−3.378	1.228	7.571	0.006	0.034		

S.E.: Standard Error, Relatives exp.: Relatives' experience of problems after C/S.

report [17]. A study from Ankara reported higher cesarean delivery levels than scheduled [16]. According to TDHS reports, there has been a continuous increase in cesarean rates in Turkey for the last 20 years [10,11], and these figures may show that this rising trend is continuing. Also, in our study we found that 32.8% of women did not agree the scheduled delivery types. Similar studies conducted in our country about preferences of delivery showed that there was a difference between the preferences of women and their types of delivery, and a higher rate of cesarean delivery was scheduled than the preferences of women [11,19]. This may be due to differences between medical recommendations/indications and women's preferences.

Considering cesarean delivery preferences in terms of socio-demographic characteristics, preference levels for cesarean delivery in our study were not affected by the variables of age, place of residence, employment status or monthly family income. According to the 2013 TDHS report, the level of cesarean delivery rises with the mother's age, education and prosperity levels [17]. Cesarean deliveries are also more prevalent among women living in cities compared to those in rural areas [11]. Some studies in the literature have reported no significant relationship between the women's age and delivery preferences [11,26–28]; while others stated that the probability of cesarean delivery was increasing with the age of the mother [13,18–20].

Studies from Turkey have determined a significant difference between delivery preferences depending on the women's place of residence (urban or rural), with cesarean delivery levels being higher among city dwellers [21–23]. Similarly, studies from Australia and China have also reported higher cesarean levels among women living in cities compared to those in rural areas [24,25]. Although we could not demonstrate a difference between types of deliveries concerning the place of residency, our results should be viewed with the limitation that the study was performed only in hospitals in the city center.

Besides studies from Turkey and other countries reporting no statistically significant relationship between delivery preferences and women's employment and income status [11,19,25,26], other studies have reported that levels of and preferences for cesarean deliveries increase with income levels [15,22,26].

A significant relationship was determined between the women's delivery preferences and education levels in our study, but this did not exhibit a trend. Preference levels for cesarean deliveries increased with an education level up to high school, while levels of preference for vaginal deliveries increased among women with degrees or associate degrees. Some studies from Turkey and other countries have reported no significant relationship between education levels and types of delivery [11,25,26], while others have determined a greater preference for cesarean deliveries among women with higher educational levels [13,14,22,26].

We determined a significantly higher preference for cesarean deliveries among women who had become pregnant as a result of fertility treatment. Similarly, a study from Ankara showed a higher preference for cesarean deliveries among women who had received fertility treatment [16]. Although pregnancies following fertility treatment increase medically indicated cesareans, the couples' perception of 'valuable baby' and the idea that cesarean is less risky may also have contributed to the figures [27].

In this study, previous types of delivery significantly affected current delivery preferences, with women who had previously undergone cesareans exhibiting a greater wish for cesarean deliveries. This is compatible with the literature. Previous studies from Turkey and other countries have determined that delivery experience is a factor in future birth preferences; women with no previous cesarean deliveries prefer substantially vaginal births, while women with at least one previous cesarean are prone to prefer cesarean births [13,15,17,28]. This important finding shows

that women who have not given birth before represent a priority population, and reveals the importance of teaching nulliparous women about the types of delivery. Targeting nulliparous women can help in bringing down cesarean section rates to the 10–15% level recommended by the WHO.

Regarding women receiving prenatal information about the types of delivery, 39% of the women in our study had received information from at least one health professional. The highest level of information was obtained from obstetricians, while 31% of women had received no information. On the other hand, also relatives, friends, and neighbors emerge as important sources of information. A striking finding in this regard is probably the effect of negative experiences of friends and relatives on the women's preferences. It may, therefore, be concluded that friends and relatives influence the decision-making process, at least in a negative fashion. A study from Erzurum showed that women who received information about delivery types preferred vaginal deliveries [13], while another study from Ankara reported a higher level of preference for cesarean deliveries among women with no information about delivery types during pregnancy [23]. These findings show the importance of social education in preventing cesarean levels rising above the anticipated level. Consequently, we suggest that public educational policies should incorporate methods of peer learning, which might prove as influential as professional advice.

The reasons for delivery preferences in our study are similar to those in the previous literature. The most common reasons for preferring a vaginal delivery are considering the health of the mother, easier postnatal healing, and the desire for a natural birth [20,21,33]. The most common reasons for preferring cesarean births, on the other hand, are medical advice/indication, and fear of giving birth [11,20,21,26,34,35]. Women need to be informed about giving birth with pharmacological and non-pharmacological, pain-free or pain-reducing methods to be able to make informed choices independent of social and individual prejudices.

In our study, appropriate sample calculation was taken to represent the urban center of the province, and the required number of participants was reached from each hospital. However, it is a limitation of our study that we only reached to the pregnant at hospitals, not reaching pregnancies that apply to primary health care services and never apply to health services.

Conclusion

The preference level for vaginal deliveries in this study was 82.8%. The vast majority of women did not receive information about the type of delivery or received information from their relative/neighbor/friend. It is also striking that obstetricians are the primary source of information among health workers. This shows the need to increase the quality of primary care services and to contribute to the provision of information, possible via incorporating peer learning methods. Future research should focus on the knowledge and attitudes of medical professionals as well as the effects of peer intervention on the opinions and behaviors of women regarding birth preferences.

Ethical considerations

The authors have carefully considered ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.).

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Conflict of interests

The authors declare that there is no conflict of interests.

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