

# Fear of childbirth in urban and rural regions of Turkey: Comparison of two resident populations

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## ABSTRACT

**OBJECTIVE:** Childbirth is a natural physiological event experienced by many women; however, it is frequently also a source of fear in women. Rates of cesarean sections in Turkey are higher in the urban areas than in the rural areas. We hypothesized that lower fear of childbirth (FOC) rates would be observed in the city having the lowest cesarean section rates in Turkey. This study aimed to compare FOC in women in two resident populations: one in a rural area and the other in an urban area.

**METHODS:** This study was conducted on 253 pregnant women in Istanbul, a large urban municipality, and Siirt, a city in rural Turkey. A descriptive information form and the A version of the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) were used.

**RESULTS:** Severe FOC levels were recorded in women in the Istanbul sample; moreover, these levels were higher than those recorded in women in the Siirt sample. In addition, women in the Istanbul sample preferred vaginal birth to cesarean section and had greater FOC, a finding which demonstrates that women prefer vaginal birth even though they have a higher FOC level and live in a city with high cesarean section rates. Where women live (rural versus urban areas) affects their perception of birth and consequently, their FOC levels.

**CONCLUSION:** The results of this study suggest that further cross-cultural and regional research is needed for better understanding FOC and factors associated with elevated FOC levels within each cultural setting.

*Keywords: Fear of childbirth, WDEQ-A, Pregnancy.*

Childbirth, a normal physiological event, is one of the most fulfilling and powerful experiences in a woman's life. Throughout pregnancy and during childbirth, women face many challenges. The fear of childbirth (FOC), which may be one of those challenges, can be an important source of distress for pregnant women and their caregivers.

Although not an isolated occurrence, FOC is associated with several problems, including anxiety, low self-esteem, depression, dissatisfaction with the partnership, and lack of support [1]. It also affects women leading to an avoidance of pregnancy, maternal and fetal stress, and an increase in maternal requests for cesarean sections. The literature

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indicates that psychological problems during pregnancy are related to negative perinatal outcomes, such as preterm birth, low birth weight, and newborn anomalies [2]. A study conducted on 2,206 pregnant women in Norway reported that FOC extended the duration of the birth process for as much as an hour and a half [3]. In another study on Swedish women, FOC caused an increase in the use of vacuum extractors [4].

Women's labor and birth mode have been affected by FOC at both individual and population levels. Maternal requests for cesarean sections have been persistently long-documented as a cause for the procedure's increasing rates in recent decades. It has also been documented that often, FOC is an underlying factor in maternal requests for cesarean sections. Therefore, FOC is considered to be the main reason for the increase in cesarean section rates [5].

Despite a lack of scientific evidence indicating substantial maternal and perinatal benefits of an increased number of cesarean sections, the rates of this procedure continue to increase worldwide (Italy, 38%; Colombia, 43%; Mexico, 46%; Iran, 48%; Egypt, 52%; and Brazil, 56%) [6]. In the United States, cesarean section rates increased for the 12th consecutive year, to 32.8% in 2012, which is a proportional increase of 56% since 1996 [7]. The World Health Organization (WHO) recommends that to optimize maternal and neonatal outcomes, cesarean section rates should not exceed 10–15 per 100 live births [8]. The Statement on Cesarean Section Rates recently released by WHO, which summarizes the results of systematic reviews and analyses conducted, indicate that cesarean section rates higher than 30% are not associated with reductions in maternal and newborn mortality rates [8].

Cesarean section rates in Turkey during 2002–2014 increased by approximately 2.5-fold (from 21% to 51%) [9]. Cesarean rates in Istanbul and Siirt were 57% and 22%, respectively; the latter demonstrated the lowest cesarean rate in Turkey [9–10]. In addition, these rates were 69.5% in private hospitals and 35.5% in state hospitals in Turkey. Because cesarean section rates are on the rise

in different hospitals, cities, and even in regions of Turkey, FOC might be a potential factor in this increase. Although the impact of FOC in some countries has been documented in the literature, a limited number of studies have focused on FOC in Turkey [11]. In light of the statistical evidence described in the preceding paragraphs, we aimed to determine whether there are interregional differences in terms of FOC. We hypothesized that lower FOC rates would be observed in the city having the lowest cesarean section rate in Turkey.

## MATERIALS AND METHODS

### Setting

This cross-sectional study was conducted between January and February 2013 with pregnant women who were admitted to health centers in Istanbul (a large urban municipality, the Istanbul sample) and Siirt (a city in rural Turkey, the Siirt sample). The health center in the city of Siirt is a state hospital which is the site of approximately 2,400 births per year (with a cesarean section rate of 24%). The health center in Istanbul is a private hospital in which approximately 2,500 births occur per year (with a cesarean section rate of 60%).

### Participants and recruitment

Eligible participants were recruited from obstetric outpatient clinics of hospitals in Siirt and Istanbul. The study samples included pregnant women who could speak Turkish, aged 18–45 years, and in the second trimester of pregnancy. Women with pregnancy complications (e.g., placenta previa, oligohydramnios, pre-eclampsia, and fetal malformation) and chronic illnesses (e.g., cardiac diseases, diabetes mellitus, epilepsy, and psychiatric disorders) were excluded from the study. Of the 155 eligible women in the Istanbul sample, 148 women (95%) were recruited in the study. Of the 110 eligible women in the Siirt sample, 105 women (95%) were recruited.

A simple random sampling was used. The participants were randomly selected from eligible women who, during a routine ultrasound screen-

ing examination, volunteered to take part in the study. The study group consisted of 148 and 105 pregnant women from Istanbul and Siirt, respectively.

### Questionnaire

We designed a 20-item questionnaire that was based on a literature review and included questions related to socio-demographic (i.e., age, education level, type of family, and employment) and obstetric (i.e., age at first birth, gravidity, parity, plan of pregnancy, previous birth(s), and preferred childbirth mode) data. Childbirth-related fear was assessed using the A version of the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ-A). The participants' socio-demographic and obstetric data were examined in terms of their effects on FOC.

In 1998, W-DEQ Version A was developed by Klass and Barbro Wijma in Sweden; its Turkish adaptation was completed by Korukcu et al. [12] W-DEQ-A is a prepartum version of the scale and comprises 33 items that assess the FOC level based on women's cognitive appraisals and expectations about delivery. The responses were scored from 0 to 5 and were measured using a 6-item Likert-type scale; total scores ranged from 0 to 165. The cut-off level was 85: scores of  $\leq 37$  indicate a mild fear level, scores of 38–65 indicate a moderate fear level, scores of 66–84 indicate a severe fear level, and scores of  $\geq 85$  demonstrate clinical fear. Using Chronbach's  $\alpha$  coefficient of 0.89 [12], the Turkish version of the W-DEQ-A was found to be reliable and valid. In the present study, Chronbach's  $\alpha$  was determined to be 0.89.

### Ethical considerations

Ethical approval for the study was obtained from the local ethical committee of the Istanbul Medipol University (protocol number: 2013/10840098-16). The study participants received verbal information about the study, were given the opportunity to ask questions, and provided written informed consent forms. The questionnaire was completed using a face-to-face interview technique.

### Data analysis

The distribution of continuous variables, such as age, age at first birth, and W-DEQ total score, were evaluated using the Shapiro–Wilk test. Normally and non-normally distributed variables are shown as mean  $\pm$  standard deviation (mean  $\pm$  SD) and median (min–max), respectively. W-DEQ total scores are expressed by both mean  $\pm$  SD and median (min–max).

Either Mann–Whitney U test or the Kruskal–Wallis test was used for comparing non-normally distributed variables. Age was compared via the Student's t-test. Categorical variables were evaluated using chi-square tests. The Mann–Whitney U test with the Bonferroni correction and a Z-test with the Bonferroni correction were performed post-hoc for the Kruskal–Wallis and chi-square tests, respectively. A p value of  $<0.05$  was accepted as statistically significant. All statistical analyses were performed using IBM SPSS Statistics 21.0 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp).

## RESULTS

### Sample characteristics

Characteristics of the two samples are presented in Table 1. The socio-demographic characteristics of both samples were well-matched, with significant differences ( $p < 0.05$ ) in age, education levels, type of family, and employment. Participants in the Istanbul sample were more likely to have higher education and employment levels and nuclear family characteristics than those in the Siirt sample.

Age at the time of the first pregnancy was 28 and 20 in the Istanbul and Siirt samples, respectively. Women in Siirt were more likely to become pregnant during their teenage years than those in Istanbul (49.5% and 2.0%, respectively). The mean number of pregnancies was  $1.7 \pm 1.1$  (min: 1; max: 8) and  $3.6 \pm 2.2$  (min: 1; max: 10) for the Istanbul and Siirt samples, respectively.

While the ratio of primigravid women (57.4%) was higher in the Istanbul sample, the ratio of multigravid women (81.9%) was higher in the Siirt sam-

ple. The mean number of births was  $0.5 \pm 0.7$  (min: 0; max: 3) and  $2.4 \pm 2.1$  (min: 0; max: 9) for the Istanbul and Siirt samples, respectively. More than half of the women in the Istanbul sample were nulliparous (64.9%), and more than half of the women in the Siirt sample were multiparous (60%). The previous cesarean section rates performed on participants in the Istanbul sample was significantly greater than that performed on those in the Siirt sample (Table 1).

In the Siirt sample, the percentage of women who preferred the vaginal birth mode ( $p < 0.001$ ) was higher than that who preferred the cesarean section mode ( $p < 0.001$ ). In the Istanbul sample, 87% women who had previously undergone cesarean sections expressed a preference for cesarean section as the mode for their next childbirth. This percentage was just 13% in the Siirt sample.

### FOC level

The mean WDEQ-A score was  $97.3 \pm 19.8$  (median: 96.5; min: 28; max: 150) in the Istanbul sample and  $77.7 \pm 16.2$  (median: 75.0; min: 34; max: 135) in the Siirt sample. Women in the Istanbul sample had higher WDEQ-A scores than those in the Siirt sample ( $p < 0.05$ ). For each sample, WDEQ-A scores were compared across a range of socio-demographic and obstetric factors to identify the groups of women with higher FOC levels (Tables 2 and 3).

A box plot of these scores (Fig. 1) indicates that the cut-off point of 85 clearly distinguishes these two groups of women. Participant residents of Istanbul were observed to have a clinical level of 75.7% FOC, while the Siirt participants had an FOC severity level of 60%.

### The Istanbul sample

There were no differences with respect to age, age at first pregnancy, education level, type of family, employment, gravidity, planned pregnancy, and previous birth mode among the WDEQ-A scores of participants in the Istanbul sample. Also in the Istanbul sample, significantly higher WDEQ-A scores were identified for nulliparous women. Moreover, being nulliparous was associated with a higher FOC level in this group. Although there were significant differences ( $p < 0.05$ )

among nulliparous, primiparous, and multiparous women, there were no significant differences in their pairwise comparisons ( $p > 0.05$ ) (Table 2).

A preference for the vaginal birth mode was found to be associated with greater WDEQ-A scores. Eighty-three participants (56.1%) indicated that they would prefer a vaginal birth mode. These women recorded WDEQ-A scores that were substantially higher (median: 100) than those of women who preferred a cesarean section mode (median: 89) ( $p < 0.05$ ) (Table 2).

### The Siirt sample

WDEQ-A scores of women in the Siirt sample demonstrated no differences with respect to age at first pregnancy, education level, employment, gravidity, parity, planned pregnancy, previous childbirth method, and preferred childbirth method. In the Siirt sample, 51 women were in their teen years at the time of their pregnancy. Significantly higher WDEQ-A scores were identified for age at first birth in women aged 25–29 years. The nuclear family characteristic was also found to be associated with greater WDEQ-A scores (Table 3).

## DISCUSSION

Numerous studies conducted in Scandinavian countries have suggested that a substantial num-

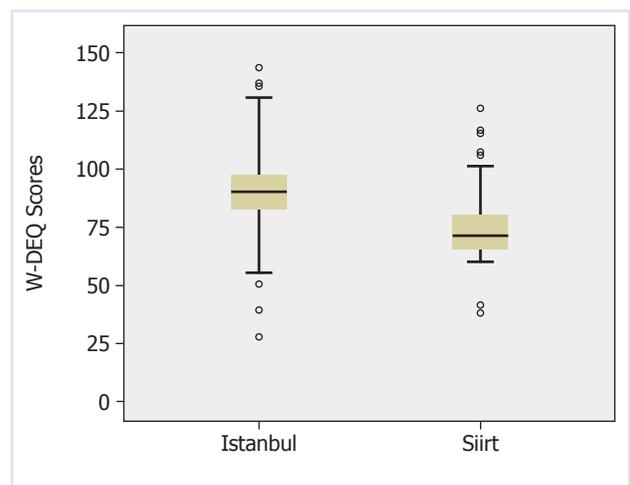


FIGURE 1. Distribution of W-DEQ scores among the groups

**TABLE 1.** Characteristics of the Istanbul and Siirt samples (n=253)

	Istanbul n=148 n (%)	Siirt n=105 n (%)	p
Age (years)			
Mean±SD	30.3±4.1	27.1±5.6	<0.001
(Min-Max)	(21-42)	(14-41)	
Education			
At most elementary	6 (4.1)	75 (71.4)	<0.001
More than elementary	142 (95.9)	30 (28.6)	
Type of family			
Nuclear	141 (95.3)	41 (39.0)	<0.001
Extended	7 (4.7)	64 (61.0)	
Employment			
Yes	94 (63.5)	7 (6.7)	<0.001
No	54 (36.5)	98 (93.3)	
Age at first pregnancy			
Median	28.0	20.0	<0.001
(Min-Max)	(18-38)	(14-41)	
Gravidity			
Primigravid	85 (57.4)	19 (18.1)	<0.001
Multigravid	63 (42.6)	86 (81.9)	
Parity			
Nulliparous	96 (64.9) <sup>a</sup>	23 (21.9) <sup>a</sup>	<0.001
Primiparous	38 (25.7)	19 (18.1)	
Multiparous	14 (9.5) <sup>b</sup>	63 (60.0) <sup>b</sup>	
Plan of pregnancy			
Planned	125 (84.5)	79 (75.2)	0.095
Unplanned	23 (15.5)	26 (24.8)	
Preferred mode of birth			
Vaginal	83 (56.1)	97 (92.4) <sup>a</sup>	<0.001
Cesarean	45 (30.4) <sup>b</sup>	7 (6.7)	
Uncertain	20 (13.5) <sup>c</sup>	1 (1.0)	
Previous mode of birth (Multiparous only) (n=134)			
Vaginal	18 (34.6)	78 (95.1)	<0.001
Caesarean section	34 (65.4)	4 (4.9)	

<sup>a,b,c</sup> Indicates statistically significant difference ( $p < 0.05$ ) in pairwise comparison of the subgroups.

ber of women experience high FOC levels [13-14]. However, a limited number of non-Scandinavian studies on the prevalence of FOC have been documented [15]. Some cross-cultural studies have also

been reported explaining factors affecting FOC [15-16]. However, a limited number of studies have focused on FOC in Turkey [11].

Unlike previously published research, the pres-

TABLE 2. Istanbul

	n	Mean±SD	Median (Min-Max)	p
Age (years)				
≤24	7	100.29±20.57	93.0 (81-143)	0.466
25-29	61	99.39±16.85	100.0 (59-145)	
30-34	57	96.72±24.38	94.0 (28-150)	
≥35	23	92.48±13.27	92.0 (54-117)	
Age at first pregnancy				
≤19	3	95.33±3.51	95.0 (92-99)	0.942
20-24	25	98.36±15.69	93.0 (77-143)	
25-29	75	98.59±18.82	97.0 (59-145)	
≥30				
Education	45	94.80±23.86	97.0 (28-150)	0.338
Elementary & Secondary	8	103.88±9.40	105.0 (90-117)	
High School	42	96.29±16.97	97.0 (59-143)	
University	98	97.24±21.49	95.5 (28-150)	
Type of family				
Nuclear	141	97.32±20.23	97.0 (28-150)	0.832
Extended	7	97.57±7.64	96.0 (90-107)	
Employment				
Yes	94	97.66±20.73	94.5 (39-150)	0.679
No	54	96.76±19.12	99.0 (28-130)	
Gravidity				
Primigravid	85	98.01±19.06	99.0 (39-145)	0.262
Multigravid	63	96.41±20.87	93.0 (28-150)	
Parity				
Nulliparous	96	100.09±19.94	100.5 (39-150)	0.017
Primiparous	38	92.66±21.04	90.0 (28-144)	
Multiparous	14	91.07±10.23	91.0 (77-117)	
Preferred mode of birth				
Vaginal	83	102.86±16.61	100.0 (65-150) <sup>a,b</sup>	<0.001
Caesarean section	45	89.71±24.34	89.0 (28-134) <sup>a</sup>	
Uncertain	20	91.55±12.84	88.0 (74-128) <sup>b</sup>	
Plan of pregnancy				
Planned	125	98.14±19.30	99.0 (39-150)	0.287
Unplanned	23	92.91±22.23	93.0 (28-130)	
Previous mode of birth				
Vaginal	18	96.67±14.54	96.0 (76-124)	0.154
Caesarean section	34	89.88±20.32	88.5 (28-144)	

<sup>a,b</sup> Indicates statistically significant difference (p<0.05) in pairwise comparison of the subgroups.

ent study was conducted on women having different cultural and socio-demographic properties. In addition, the study was conducted to fill the gap in

knowledge with respect to specific aspects of FOC in Turkish women. As is true in many societies worldwide, the Turkish health authority strongly

TABLE 3. Siirt

	n	Mean±SD	Median (Min-Max)	p
Age (years)				
≤24	32	77.59±16.70	74.0 (51-122)	0.782
25-29	37	80.89±17.13	74.0 (53-132)	
30-34	27	74.07±15.13	75.0 (34-111)	
≥35	9	76.11±13.56	78.0 (56-102)	
Age at first pregnancy				
≤19	51	75.69±15.64	72.0 (51-132) <sup>a</sup>	0.045
20-24	39	76.92±16.24	75.0 (34-122)	
25-29	13	87.38±16.95	81.0 (64-113) <sup>a</sup>	
Not attended a school	36	75.03±14.05	77.0 (34-111)	0.201
Education				
Illiterate	36	75.03±14.05	77.0 (34-111)	0.201
Elementary	39	77.03±14.28	74.0 (51-132)	
Secondary	20	78.10±20.63	68.5 (53-122)	
High school & University	10	89.40±18.26	86.5 (69-113)	
Type of family				
Nuclear	41	81.46±20.26	81.0 (34-132)	0.037
Extended	64	75.33±12.62	73.0 (51-111)	
Employment				
Yes	7	92.29±28.57	106.0 (39-113)	0.061
No	98	76.68±14.68	74.0 (34-132)	
Gravidity				
Primigravid	19	81.74±22.73	76.0 (51-122)	0.927
Multigravid	86	76.84±14.44	74.5 (34-132)	
Parity				
Nulliparous	23	81.00±20.92	76.0 (51-122)	0.113
Primiparous	19	83.11±13.85	82.0 (64-119)	
Multiparous	63	74.90±14.48	74.0 (34-132)	
Preferred mode of birth				
Vaginal	97	78.31±16.00	75.0 (34-132)	0.599
Caesarean section	7	71.57±19.67	77.0 (39-94)	
Plan of pregnancy				
Planned	79	78.27±17.96	74.0 (34-132)	0.935
Unplanned	26	76.08±9.21	77.5 (56-96)	
Previous mode birth				
Vaginal	78	77.10±14.34	74.0 (34-132)	0.893
Caesarean section	4	71.00±22.14	77.5 (39-90)	

<sup>a</sup>indicates statistically significant difference (p<0.05) in pairwise comparison of the subgroups.

promotes the vaginal birth mode. However, there are significant differences between western and eastern Turkey in its perform. Siirt and Van, two

cities located in the eastern Anatolian region of Turkey have the lowest cesarean section rates (22%) [10]. We opted to include participants from Siirt

for examining correlations between FOC and the preferred method of childbirth.

Women in the Istanbul sample were older and had higher educational levels than those in the Siirt sample. The rates of those living in nuclear families, working, and whose income exceeded expenses were higher for women in the Istanbul sample. Data from the Turkey Demographic and Health Survey [17] show that eastern and western Turkey are not equal in terms of education levels. The findings of this study related to the socio-demographic characteristics of pregnant women were consistent with Turkey Demographic and Health Survey data [17]. An analysis of the Siirt sample also revealed that participants with extended families had a significantly lower FOC than those in nuclear families. This result is in line with the literature [18] and indicates that women who receive support from close relatives may have reduced FOC.

Studies have observed that primiparous women report higher FOC levels during their pregnancies [14]. We found no significant differences in FOC between primigravid and multigravid women in either sample. This result is consistent with findings reported by Nilsson et al. [18] and Ternström et al. [19]. Although there were significant differences among nulliparous, primiparous, and multiparous women, there were no significant differences in their pairwise comparisons. This finding is not consistent with previously published results [13] and may result for numerous reasons, such as social, cultural, ethnical, socio-demographic, or even religious factors.

Women live in a social environment; they communicate with other women who have experienced vaginal childbirth and/or cesarean sections. Sen et al. [20] reported a correlation between communication about delivery with other parous women and attitudes related to fear of delivery. The authors also noted, however, that it was not clear whether or not the prevalence of shared positive birth stories contributed to the childbirth experience. Some pregnant women (6–10% of the participants) reported to have experienced anxiety and anxiety-related symptoms/or FOC in their daily lives [21]. A lack of preparation (for several reasons) for childbirth

and a lack of sufficient information about birth and pregnancy were found to be related to women's FOC [22]. Nulliparous women tend to be more anxious about the childbirth process because it represents a situation that is unknown to them [23]. This kind of anxiety and/or fear may be attributed to a complexity of emotions during pregnancy [24]. Future research should focus on these emotional factors in an attempt to understand which of them contribute to FOC and in what ways. We suggest that women with or without FOC should be closely monitored throughout their first or/and subsequent pregnancies.

Previous studies have shown that women who have experienced a cesarean section are more likely to opt for a subsequent operative birth [25, 26]. Our results were also in line with those of previous studies. Of the women in the Istanbul sample who have undergone a cesarean section, 87% preferred cesarean section as the mode of delivery in their subsequent birth(s). In a study on western Australian women, Fenwick et al. [27] reported that discouragement by clinicians to choose a vaginal birth after having a cesarean section plays a role in the increased rate of cesarean sections. It has also been acknowledged that women are more likely to request a repeat cesarean than a primary cesarean because of the powerful influence of their clinicians [28]. The influence of clinicians was confirmed in our study. We also believe that midwifery support and antenatal counseling could have a positive effect on the decrement of cesarean section rates.

It is interesting to note that we found regional differences in the participants' preferences for the birth mode. Women in the Istanbul sample (30.4%) were more likely to prefer a cesarean section than their Siirt counterparts (6.7%). This pattern was not reflected in the actual cesarean section rates reported for each of the cities. During the period of the study (2013), the cesarean section rates were 57% in Istanbul and 22% in Siirt [9, 10]. This difference may be attributed to the socio-economic status because we recruited our Istanbul sample from a private hospital. However, participants in our Siirt sample had been admitted to a state hospital. The present study revealed that women in the Istanbul

sample experienced higher FOC levels than those in the Siirt sample. FOC demonstrated by participants in the Istanbul sample was a more commonly observed phenomenon in women who preferred the vaginal birth mode. Moreover, those in the Istanbul sample who preferred the vaginal birth mode had significantly higher FOC scores.

It is interesting to note that women in the Siirt sample who preferred the vaginal birth mode had no significantly different ( $p > 0.05$ ) FOC levels compared with those who preferred the cesarean section mode. This finding may be attributed to childbirth, which is, itself, a factor in FOC. Therefore, childbirth may also be regarded to as a woman's fate, which must be experienced.

Women in the Istanbul sample demonstrated significantly higher preference rates ( $p < 0.05$ ) for the cesarean section mode than those in the Siirt sample (30.4% vs. 6.7%). However, women in the Istanbul sample who preferred the vaginal birth mode had significantly higher FOC scores than those who preferred the cesarean section mode. The vaginal birth-related fear scores were significantly higher ( $p < 0.05$ ) in women the Istanbul sample than in those in the Siirt sample. Moreover, the clinical fear score in the Istanbul sample (75.7% of all women) was significantly higher ( $p < 0.05$ ) than that in the Siirt sample (23.8% of all women). We think that it is difficult to explain the reason(s) for FOC because it is the result of multiple factors. We also believe that future studies should be conducted for clarifying the association between FOC and factors related to childbirth.

Severe FOC levels were recorded for participants in the Siirt sample; however, these FOC levels were lower than those recorded for participants in the Istanbul sample. In addition, women in the Istanbul sample who preferred the vaginal birth mode to the cesarean section mode had higher FOC scores. This finding indicates that women prefer vaginal birth even if they have higher FOC levels and live in a city with a high rate of cesarean sections. Where women live (a rural area versus an urban area) affects their perception of birth and consequently, their FOC. To reduce the cesarean section rates, which are increasing worldwide, it will be very im-

portant to analyze the experiences of women who live in rural areas. The results of this study suggest that further cross-cultural and regional research is needed to better understand FOC as well as factors associated with elevated fear levels within each cultural setting. In addition, we suggest that a governmental midwifery-led care model be implemented within the health systems for reducing negative perceptions of childbirth, handling fear associated with it as well as extending support to all Turkish women who experience childbirth.

### Limitations

Limitations of the current study must be noted. The samples used in the present study were relatively small, which may have impacted the power of the study. Istanbul and Siirt are extremely different cities with respect to several aspects. Istanbul ranks as the world's seventh largest city based on population and is the largest city in Europe. The population of the Istanbul Metropolitan Municipality, reported to be 14,377,019 at the end of 2014, comprises 19% of Turkey's population. The remarkable growth is, and continues to be, largely fueled by immigrants from eastern Turkey who seek employment and improved living conditions [29]. In contrast, Siirt is a city with one of the lowest populations and the highest fertility rate in the southeastern Anatolia region. Turkish Statistical Institute data indicate that the total fertility rate in 2014 was 3.86 in Siirt and 1.77 in Istanbul [30]. In addition, cesarean section rates in Istanbul and Siirt were 57% and 22%, respectively [9, 10]. These statistics prompted us to explore cesarean section rates in Turkey and to determine some clue for interregional differences.

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