Turkish Journal of Clinical Research

Turk J Clin Res. 2026;2(2):137-147
https://doi.org/10.63909/1453054

RESEARCH ARTICLE

# A comparison of fear of childbirth and delivery method preferences among students at the faculty of health sciences and engineering

# Sağlık bilimleri ve mühendislik fakültesi öğrencilerinin doğum korkusu ve doğum şekli tercihlerinin karşılaştırması

Begum CAN[1], Kubra Nur KILIC[1], Reyhan AYDIN DOGAN[1], Sebahat HUSEYINOGLU[1], Munire KOK[1], Fatmanur ESEN ALTINOK[1]

[1]Karabük University, Faculty of Health Science, Department of Midwifery, Karabük, Türkiye
[2]Kütahya City Hospital, Kütahya, Türkiye
[3]Hatay Defne State Hospital, Hatay, Türkiye

## Abstract

**Aim:** The aim of this study was to determine and compare the levels of pre-pregnancy fear of childbirth among female and male students enrolled in the Faculties of Health Sciences and Engineering, either for themselves or for their future spouses.

**Methods:** This was a single-center descriptive cross-sectional study. The study population consisted of students enrolled in the Faculty of Health Sciences and the Faculty of Engineering at Karabük University. Data were collected using a descriptive questionnaire and the Pre-Pregnancy Fear of Childbirth Assessment Scale. SPSS Version 25.0 was used for data analysis.

**Results:** In multiple linear regression analysis, gender, place of residence, and preferred method of delivery were identified as significant predictors of pre-pregnancy fear of childbirth. Fear of childbirth scores were higher among female students and lower among those living in villages. Students who preferred cesarean delivery also had higher fear of childbirth scores than those who preferred normal vaginal delivery. Age, type of faculty, and other variables did not show a significant association.

**Conclusion:** Pre-pregnancy fear of childbirth scores among university students were associated with individual characteristics such as gender, place of residence, and preferred method of delivery. The results indicate that fear of childbirth cannot be explained solely by the faculty in which the student is enrolled; rather, it is a multidimensional phenomenon that requires a combined assessment of educational content, knowledge and experiences related to childbirth, and individual psychosocial factors.

**Keywords:** Fear of childbirth, students, delivery, midwifery, engineering.

## Özet

**Amaç:** Sağlık Bilimleri ve Mühendislik Fakültelerinde okuyan kadın ve erkeklerin kendi ya da gelecekteki eşlerinin gebelik öncesi doğum korkusu düzeylerinin belirlenmesi ve karşılaştırılması amaçlanmıştır.

**Yöntemler:** Bu çalışma tek merkezli, tanımlayıcı ve kesitsel tipte yürütülmüştür. Çalışmanın evrenini Karabük Üniversitesi Sağlık Bilimleri Fakültesi ve Mühendislik Fakültesinde öğrenim gören öğrenciler oluşturmuştur. Veri toplamada tanımlayıcı form ve Gebelik Öncesi Doğum Korkusu Değerlendirme Ölçeği kullanılmıştır. Verilerin analizinde SPSS Paket Programı Versiyon 25,0 kullanılmıştır.

**Bulgular:** Çoklu doğrusal regresyon analizinde, gebelik öncesi doğum korkusunun anlamlı yordayıcılarının cinsiyet, yaşanılan yer ve gelecekte tercih edilen doğum şekli olduğu belirlenmiştir. Doğum korkusu puanları kadın öğrencilerde daha yüksek, köyde yaşayanlarda daha düşük bulunmuştur. Ayrıca sezaryen doğumu tercih eden öğrencilerin doğum korkusu puanları, normal vajinal doğumu tercih edenlere göre daha yüksektir. Yaş, fakülte türü ve diğer değişkenler anlamlı ilişki göstermemiştir.

**Sonuç:** Üniversite öğrencilerinde gebelik öncesi doğum korkusu puanlarının cinsiyet, yaşanılan yer ve gelecekte tercih edilen doğum şekli gibi bireysel özelliklerle ilişkili olduğu belirlenmiştir. Sonuçlar, doğum korkusunun yalnızca öğrenim görülen fakülte ile açıklanamayacağını; eğitim içeriği, doğuma ilişkin bilgi ve deneyimler ile bireysel psikososyal faktörlerin birlikte değerlendirilmesi gereken çok boyutlu bir olgu olduğunu göstermektedir.

**Anahtar Kelimeler:** Doğum korkusu, öğrenciler, doğum, ebelik, mühendislik.

**Corresponding Author:** Begum CAN begumcan@karabuk.edu.tr
**Cite as:** Can B, Kilic KN, Aydin Dogan R, Huseyinoglu S, Kok M, Esen Altınok F. A comparison of fear of childbirth and delivery method preferences among students at the faculty of health sciences and engineering. Turk J Clin Res. 2026;2(2):137-147



Content of this journal is licensed under a Creative Commons Attribution-NonCommercial-NonDerivatives 4.0 International License

**Received:** 10 July 2026 | **Accepted:** 22 September 2026 | **Published:** 30 September 2026

Turk J Clin Res. 2026;2(2):137-147
https://doi.org/10.63909/1453054

## INTRODUCTION

Pregnancy and childbirth are among the most significant events in a woman's life. Childbirth, which is unique for every woman, can evoke a range of emotions—such as joy, hope, anxiety, and fear—making this experience subjective, far-reaching, and sometimes quite complex (1).

The fear of childbirth, also known as tokophobia or maieusophobia, is a condition that can occur to varying degrees from childhood through old age (2). Fear and anxiety related to childbirth, particularly among nulliparous women, are common (3). When this fear reaches a level of intensity that prevents a woman from carrying out her daily activities, it is referred to as a pathological fear, and this condition is observed in approximately 6–10% of pregnant women (4). Pregnancy age, number of births, high-risk conditions during pregnancy, pain threshold, social support, previous childbirth experiences, and economic and social characteristics are among the factors that can influence the development of fear of childbirth (5,6). There are many factors that influence childbirth preferences, such as fear of labor pain, a sense of safety, previous childbirth experiences, guidance from healthcare providers, the resources a woman uses to access information, her level of education, and social and cultural characteristics (5). Fear of childbirth, one of the most important factors influencing the choice of delivery method, plays a significant role in the decision to opt for a cesarean section (7). Cesarean deliveries are of great importance for saving lives when necessary. For this reason, cesarean delivery must be readily available to all women when needed. However, all unnecessary surgical procedures and cesarean deliveries have a negative impact on the health of both the mother and the baby. In cesarean deliveries, risks such as bleeding and infection, a prolonged postpartum recovery period, delays in skin-to-skin contact and breastfeeding, and an increased risk of complications in future pregnancies are more common (8). Since 1985, the international medical community has considered the ideal cesarean section rate to be between 10 and 15 percent. However, there has been a significant increase in cesarean section rates in both developed and developing countries (9). According to data from the World Health Organization (WHO), cesarean deliveries account for 21% of all births—in other words, more than one in five. Based on these figures, this rate is expected to continue rising through 2030, with approximately one-third of all births occurring via cesarean section (8). In our country as well, there has been a significant increase in cesarean section rates from the past to the present. According to data from the Turkey Demographic and Health Survey-2018 (TNSA-2018), the cesarean section rate was 7% in 1993, rising to 37% in 2008 and 52% in 2018 (10).

Studies have shown that a previous negative childbirth experience, the number of births, economic status (12), the fear that the baby will be harmed (13), labor pain and the labor process, interventions performed during labor, the loss of control experienced during labor (3), episiotomy (2) can lead to fear of childbirth, and that this fear influences the choice of delivery method (7,13).

According to our current knowledge, most studies on fear of childbirth in our country have focused on married women or those who have experienced childbirth; however, there are not enough studies evaluating the effects of fear of childbirth on single women and men. Based on this need, this study was designed to determine and compare the levels of fear of childbirth—either for themselves or their future spouses—among female and male students enrolled in the Faculties of Health Sciences and Engineering. Based on the findings of this study, identifying the necessary prenatal education and counseling topics for women and their partners could help reduce the level of fear of childbirth and thereby mitigate its negative impact on birth preferences.

### Research Questions

1. Do pre-pregnancy fear of childbirth scores differ between students in the Faculties of Health Sciences and Engineering?

2. Do the two faculties differ in terms of their preferred future mode of delivery?

3. Are students' sociodemographic characteristics associated with pre-pregnancy fear of childbirth scores?

4. What are the independent predictors of pre-pregnancy fear of childbirth scores?

Turk J Clin Res. 2026;2(2):137-147
https://doi.org/10.63909/1453054

5. Are pre-pregnancy fear of childbirth scores associated with a preference for cesarean delivery?

## METHODS

### Type of Study

This was a single-center descriptive cross-sectional study.

### Location and Time of the Study

The study was conducted between May 10, 2022, and December 20, 2022. Data for the study were collected between May 15, 2022, and June 15, 2022, through face-to-face interviews at Karabük University.

### Study Population and Sample

The study population consists of students enrolled in the Faculty of Engineering and the Faculty of Health Sciences at Karabük University. During the spring semester of the 2021–2022 academic year at Karabük University, the number of students enrolled in the Faculty of Engineering was 3,000, while the number of students enrolled in the Faculty of Health Sciences was 1,500. The sample size was determined to be 355 based on a population of 4,500, a prevalence of 50% (since no study had been conducted on the prevalence of fear of childbirth among students, a prevalence of 50% was assumed), a margin of error of 5%, and a 95% confidence interval. Based on this sample size, the number of students to be selected from each faculty was determined using the stratified sampling method. As a result, it was planned to select 200 students from the Faculty of Engineering and 155 students from the Faculty of Health Sciences. The final analysis included 443 students (311 from the Faculty of Engineering and 132 from the Faculty of Health Sciences). The calculated sample size of 355 represented the minimum required sample rather than a fixed recruitment target; therefore, recruitment continued throughout the predetermined data-collection period, and all eligible students who volunteered were included to improve statistical precision. Consequently, the achieved faculty distribution reflected differences in the numbers of eligible students and voluntary participation rates between the faculties.

### Inclusion Criteria

- Being enrolled in the Faculty of Engineering and Health Sciences at Karabük University,
- Agreeing to participate in the study.

### Exclusion Criteria

- Being enrolled in a program other than the Faculty of Engineering and Health Sciences at Karabük University,
- Having children,
- Refusing to participate in the study.

### Data Collection Tools and Data Collection Method

The data for this study were collected between May 15, 2022, and June 15, 2022, through in-person interviews at Karabük University. The Personal Information Form and the Pre-Pregnancy Fear of Childbirth Scale were used as data collection tools.

Descriptive Questionnaire: This questionnaire was developed by researchers following a detailed literature review. The descriptive questionnaire consists of 13 questions covering sociodemographic characteristics and preferences regarding mode of delivery.

Pre-Pregnancy Fear of Childbirth Assessment Scale (PP-FCAS): The Pre-Pregnancy Fear of Childbirth Scale, developed by Stoll et al. (14), is a self-administered measure designed to assess pre-pregnancy fear of childbirth among young women and men. The Turkish validity and reliability study was conducted by Uçar and Taşhan (15). The scale includes the dimensions that most contribute to fear of childbirth among young women and men: labor pain, loss of control, inability to cope with labor pain and childbirth, complications, and irreversible physical damage. Responses on the 10-item scale are numbered from 1 to 6 and follow a six-point Likert scale. The responses are coded as follows: 1="strongly disagree," 2="disagree," 3="somewhat disagree," 4="somewhat agree," 5="agree," and 6="strongly agree." The minimum score on the scale is 10, and the maximum score is 60. A higher total score on the scale indicates a higher level of fear. The Cronbach's alpha reported in the Turkish validation study was 0.86. In the present study, PP-FCAS scores were analyzed as continuous total scores, and participants were not classified as having

Turk J Clin Res. 2026;2(2):137-147
https://doi.org/10.63909/1453054

a clinical diagnosis of tokophobia. Male participants completed the sex-specific male version of the scale, in which the items and instructions refer to childbirth involving a future spouse. The scale demonstrated excellent internal consistency in the present sample, with a Cronbach's alpha coefficient of 0.96.

### Data Analysis

IBM SPSS Software Version 25.0 was used to analyze the data. Categorical data obtained from the study are presented as percentage distributions, and continuous data are presented as mean ± standard deviation (x̄ ± SD). The suitability of continuous variables for a normal distribution was assessed using skewness and kurtosis values, the Kolmogorov-Smirnov test, and histograms. Parametric and non-parametric tests were used to evaluate the relationship between dependent and independent variables, depending on the data type. For normally distributed data, the Student's t-test was used to compare variables with two categories, and the one-way ANOVA test was used to compare variables with three or more categories. When the data did not follow a normal distribution, the Mann-Whitney U test was applied to compare variables with two categories, and the Kruskal-Wallis test was applied to compare variables with three or more categories. When significant differences were found in variables with three or more groups, the Bonferroni and Dunn post-hoc tests were used to determine which groups accounted for the differences. Pearson's correlation analysis and Spearman's correlation analysis were used to assess relationships between variables. Factors predicting fear of childbirth before pregnancy were analyzed using linear regression. The threshold for statistical significance was set at $p<0.05$. The assumptions of multiple linear regression, including the normal distribution of residuals, absence of problematic multicollinearity, and independence of errors, were checked and found to be satisfactorily met.

### Ethical Considerations

Ethical approval was obtained from the Karabük University Social and Human Sciences Research Ethics Committee (approval date: 11 May 2022; meeting/decision no.: 2022/04-35). The necessary institutional permissions were obtained from the relevant faculties before data collection. All participants were informed about the purpose and procedures of the study, and written informed consent was obtained from each participant before data collection.

## RESULTS

When comparing the demographic characteristics of students in the Faculty of Engineering and the Faculty of Health Sciences, statistically significant differences were found for certain variables. The mean age of students in the Faculty of Engineering (22.5±2.4) is higher than that of students in the Faculty of Health Sciences (21.6±2.1) ($Z=-4.224$; $p<0.001$). While the majority of students in the Faculty of Engineering are male (71.4%), the majority of students in the Faculty of Health Sciences are female (87.1%) ($\chi^2=127.667$; $p<0.001$). There is a significant difference between the groups based on family type ($\chi^2=10.715$; $p=0.005$). The prevalence of nuclear families is higher among students in the Faculty of Health Sciences (82.6%). There is a significant difference among faculties based on the father's educational background ($\chi^2=14.013$; $p=0.007$). While the proportion of students in the Faculty of Health Sciences whose fathers are elementary and middle school graduates is higher, the proportion of students in the Faculty of Engineering whose fathers are high school and college graduates is higher. There are significant differences across faculties regarding whether students had previously received information about childbirth ($\chi^2=10.931$; $p=0.001$). A larger proportion of students in the Faculty of Health Sciences had received information about childbirth (78.8%). Significant differences were found among the faculties in terms of information sources ($\chi^2=79.993$; $p<0.001$). Students in the Faculty of Health Sciences primarily obtain information from school (52.3%). In contrast, the proportion of students who do not obtain information is higher among students in the Faculty of Engineering (33.1%). A significant difference was found between groups based on planned mode of delivery ($\chi^2=9.721$; $p=0.002$). In both faculties, the majority of students plan to opt for a normal vaginal delivery. However, the proportion of students planning to opt for a cesarean delivery is higher among students in the Faculty of Engineering (23.5%) than among students in the Faculty of Health Sciences (10.6%) (Table 1).

Turk J Clin Res. 2026;2(2):137-147
https://doi.org/10.63909/1453054

**Table 1. Descriptive characteristics of the students**

| Variable | Students in the Faculty of Engineering (n=311) | | Students of the Faculty of Health Sciences (n=132) | | Test Stat. | P |
|---|---|---|---|---|---|---|
| | Mean±SD*** | Min-Max (Median) | Mean±SD*** | Min-Max (Median) | | |
| **Age** | 22.5±2.4 | 18-41 (22.0) | 21.6±2.1 | 18-32 (21.0) | -4.224** | **<0.001** |
| | **n** | **%** | **n** | **%** | | |
| **Gender** | | | | | | |
| Male | 222 | 71.4 | 17 | 12.9 | 127.667* | **<0.001** |
| Female | 89 | 28.6 | 115 | 87.1 | | |
| **Marital Status** | | | | | | |
| Single | 299 | 96.1 | 128 | 97.0 | 0.183* | 0.669 |
| Married | 12 | 3.9 | 4 | 3.0 | | |
| **Place of Residence** | | | | | | |
| Province | 183 | 58.8 | 84 | 63.6 | 5.993* | 0.112 |
| District | 87 | 28.0 | 30 | 22.7 | | |
| Town | 16 | 5.1 | 2 | 1.5 | | |
| Village | 25 | 8.0 | 16 | 12.1 | | |
| **Family type** | | | | | | |
| Nuclear | 221 | 71.1 | 109 | 82.6 | 10.715* | **0.005** |
| Extended | 55 | 17.7 | 20 | 15.2 | | |
| Non-intact family | 35 | 11.3 | 3 | 2.3 | | |
| **Mother's educational level** | | | | | | |
| Literate | 15 | 4.8 | 8 | 6.1 | 9.384* | 0.052 |
| Elementary school | 91 | 29.3 | 49 | 37.1 | | |
| Middle school | 72 | 23.2 | 37 | 28.0 | | |
| High school | 101 | 32.5 | 33 | 25.0 | | |
| College | 32 | 10.3 | 5 | 3.8 | | |
| **Father's educational level** | | | | | | |
| Literate | 10 | 3.2 | 4 | 3.0 | 14.013* | **0.007** |
| Elementary school | 55 | 17.7 | 37 | 28.0 | | |
| Middle school | 60 | 19.3 | 36 | 27.3 | | |
| High school | 125 | 40.2 | 41 | 31.1 | | |
| College | 61 | 19.6 | 14 | 10.6 | | |
| **Voluntary choice of profession** | | | | | | |
| Yes | 248 | 79.7 | 110 | 83.3 | 0.770* | 0.380 |
| No | 63 | 20.3 | 22 | 16.7 | | |
| **Previous exposure to information about childbirth** | | | | | | |
| Yes | 195 | 62.7 | 104 | 78.8 | 10.931* | **0.001** |
| No | 116 | 37.3 | 28 | 21.2 | 21.2 | |
| **Source of information** | | | | | | |
| Family/friends | 90 | 28.9 | 24 | 18.2 | 79.993* | **0.000** |
| Magazines/TV/Internet | 79 | 25.4 | 15 | 11.4 | | |
| School | 39 | 12.5 | 69 | 52.3 | | |
| Did not receive any information | 103 | 33.1 | 24 | 18.2 | | |
| **Preferred method of delivery** | | | | | | |
| Vaginal birth | 238 | 76.5 | 118 | 89.4 | 9.721* | **0.002** |
| Cesarean section | 73 | 23.5 | 14 | 10.6 | | |
| Total | **311** | **70.2** | **132** | **29.8** | | |

** Pearson's Chi-Square **Man Whitney U ***SD: Standard Deviation*

Turk J Clin Res. 2026;2(2):137-147
https://doi.org/10.63909/1453054

Table 2 compares the total scores on the Pre-Pregnancy Fear of Childbirth Assessment Scale (PP-FCAS) between students in the Faculty of Health Sciences and the Faculty of Engineering. The mean total PP-FCAS score for students in the Faculty of Health Sciences was 37.1±11.3 (min–max: 10–60; median: 38), while for students in the Faculty of Engineering, the mean was 36.2±11.2 (10–60; median: 37). No statistically significant difference was found between the two groups in terms of the total PP-FCAS score (test statisti=-0.785; p=0.433) (Table 2).

**Table 2. Scoring on the pre-pregnancy fear of childbirth assessment scale**

| Variable | Mean±SD | Min-Max (Median) |
|---|---|---|
| PP-FCAS* Faculty of Health Sciences Total Score | 37.1±11.3 | 10-60 (38) |
| PP-FCAS* Engineering Faculty Total Score | 36.2±11.2 | 10-60 (37) |
| Test stat.** | -0.785 | |
| p | 0.433 | |

** Scoring on the Pre-Pregnancy Fear of Childbirth Assessment Scale, SD= Standard Deviation **Independent Sample T test.*

Pre-pregnancy fear of childbirth scores among students in the Faculty of Engineering showed significant differences based on certain variables. The mean fear of childbirth score for female students (39.4±12.7) was significantly higher than that of male students (34.9±10.3) (t=-3.005; p=0.003). A significant difference was observed in fear of childbirth scores based on place of residence (F=4.020; p=0.008). The average score for students living in district centers was higher than that for students living in villages. A significant difference was observed in fear of childbirth scores based on the father's educational level (F=2.622; p=0.035). Students whose fathers were high school graduates had higher scores compared to those whose fathers were middle school graduates or literate but had not completed formal education. The average birth anxiety score among students who had previously received information about childbirth (37.7±10.8) was significantly higher than that of students who had not received such information (33.6±11.5) (t=3.220; p=0.001). There is a significant difference in fear of childbirth scores based on the source of information (F=2.695; p=0.046). Students who did not receive information about childbirth have lower scores compared to those who received information from family or friends. Among students in the Faculty of Health Sciences, a significant difference in fear of childbirth scores was observed based on the father's educational status (F=3.195; p=0.015). The average fear of childbirth score for students whose fathers were literate was lower than that of students whose fathers were middle school or college graduates (Table 3).

In Table 4, the factors predicting pre-pregnancy fear of childbirth (total PP-FCAS score) were examined using multiple linear regression analysis. The model was found to be statistically significant overall (F(8, 434)=5.12; p<0.001), and the independent variables explained 9% of the variance in the fear of childbirth score ($R^2$=0.09) (Table 4).

At the variable level, gender is a significant predictor; female students' fear of childbirth scores were found to be higher than those of male students (B=4.79; 95% CI [2.34; 7.25]; β=0.21; p<0.001). When "province" was used as the reference category for the place of residence variable, fear of childbirth scores were found to be significantly lower among those living in villages (B=–4.71; 95% CI [–8.29; –1.13]; β=–0.12; p=0.010). Additionally, among those who indicated a preference for cesarean delivery in the future, the fear of childbirth score was found to be higher than among those who preferred normal vaginal delivery (B=3.38; 95% CI [0.76; 6.00]; β=0.12; p=0.012).

In contrast, age (p=0.314) and type of faculty (Health Sciences vs. Engineering; p=0.218) did not significantly predict the fear of childbirth score. The variables of living in a district (p=0.071) and not having previously received information about childbirth (p=0.075) remained at borderline levels; living in a town, however, was not significant (p=0.977).

Turk J Clin Res. 2026;2(2):137-147
https://doi.org/10.63909/1453054

**Table 3.** The effect of the sociodemographic characteristics of engineering and health sciences students on their fear of childbirth scores

| Variable | Scoring on the Pre-Pregnancy Fear of Childbirth Assessment Scale | |
|---|---|---|
| | Faculty of Engineering | Faculty of Health Sciences |
| | Mean±SD | Mean±SD |
| **Age** | | |
| **Test Stat.*** ** | -0.049 | -0.160 |
| **P** | 0.388 | 0.067 |
| **Gender** | | |
| Male | 34.9±10.3 | 33.1±11.1 |
| Female | 39.4±12.7 | 37.69±11.2 |
| **Test Stat.*** | -3.005 | -1.588 |
| **P** | **0.003** | 0.115 |
| **Marital Status** | | |
| Single | 36.3±10.9 | 37.2±11.1 |
| Married | 32.3±17.3 | 34.0±18.3 |
| **Test Stat.*** | 0.812 | 0.555 |
| **P** | 0.433 | 0.580 |
| **Place of Residence** | | |
| Province[1] | 35.6±10.8 | 37.8±10.5 |
| District[2] | 39.0±10.9 | 38.0±10.4 |
| Town[3] | 36.1±10.7 | 24.0±19.8 |
| Village[4] | 30.8±12.9 | 33.4±15.2 |
| **Test Stat.**** | 4.020 (2>4) | 1.649 |
| **P** | **0.008** | 0.181 |
| **Family type** | | |
| Nuclear | 36.3±11.0 | 36.4±11.1 |
| Extended | 35.7±12.5 | 39.9±11.6 |
| Non-intact family | 36.0±10.7 | 44.3±12.9 |
| **Test Stat.*** | 0.081 | 1.468 |
| **P** | 0.923 | 0.234 |
| **Mother's educational level** | | |
| Literate | 36.9±14.5 | 34.6±20.9 |
| Elementary school | 35.3±11.6 | 35.9±10.1 |
| Middle school | 36.5±10.3 | 36.5±10.5 |
| High school | 37.6±10.0 | 40.1±10.4 |
| College | 33.0±13.3 | 47.0±15.0 |
| **Test Stat.**** | 1.251 | 0.829 |
| **P** | 0.289 | 0.509 |

| Variable | Scoring on the Pre-Pregnancy Fear of Childbirth Assessment Scale | |
|---|---|---|
| | Faculty of Engineering | Faculty of Health Sciences |
| | Mean±SD | Mean±SD |
| **Father's educational level** | | |
| Literate[1] | 30.6±12.6 | 20.3±13.7 |
| Elementary school[2] | 35.0±11.7 | 36.4±10.8 |
| Middle school[3] | 33.6±11.5 | 39.5±9.9 |
| High school[4] | 38.1±9.9 | 36.2±11.9 |
| College[5] | 36.8±12.0 | 40.1±10.3 |
| **Test Stat.**** | 2.622 (4>3.1) | 3.195 (1<3.5) |
| **P** | **0.035** | **0.015** |
| **Choosing a Career by Choice** | | |
| Yes | 36.6±11.0 | 36.6±10.7 |
| No | 34.7±12.0 | 39.5±14.0 |
| Test Stat.* | 1.201 | -1.098 |
| P | 0.231 | 0.274 |
| **Previous Experience with Obtaining Information About Childbirth** | | |
| Yes | 37.7±10.8 | 36.8±10.5 |
| No | 33.6±11.5 | 38.3±13.9 |
| **Test Stat.*** | 3.220 | -0.520 |
| **P** | **0.001** | 0.606 |
| **Source of information** | | |
| Family/friends[1] | 38.3±11.2 | 36.2±11.2 |
| Magazines/TV/Internet[2] | 37.1±11.0 | 40.5±11.7 |
| School[3] | 34.6±11.0 | 40.1±10.3 |
| Did not receive any information[4] | 34.2±11.1 | 36.4±9.9 |
| **Test Stat.**** | 2.695 (1>4) | 0.641 |
| **P** | **0.046** | 0.590 |
| **Preferred method of delivery** | | |
| Vaginal birth | 35.6±10.7 | 36.5±10.7 |
| Cesarean section | 38.2± 12.6 | 42.5±14.4 |
| **Test Stat.*** | -1.754 | -1.917 |
| **P** | 0.080 | 0.057 |

**Student's t-test, **One-Way ANOVA, ***Pearson correlation.*

Turk J Clin Res. 2026;2(2):137-147
https://doi.org/10.63909/1453054

**Table 4. Results of multiple linear regression analysis on factors predicting fear of childbirth before pregnancy**

| Cancer Type | *B* | *SE* | 95,00% CI | *β* | *t* | *p* |
|---|---|---|---|---|---|---|
| **(Intercept)** | 39.57 | 5,17 | [29.41, 49.73] | 0.00 | 7.66 | <0.001 |
| **Age** | -0.22 | 0.22 | [-0.66, 0.21] | -0.05 | -1.01 | 0.314 |
| **Faculty=Health Sciences** | -1.66 | 1.35 | [-4.31, 0.99] | -0.07 | -1.23 | 0.218 |
| **Gender=Female** | 4.79 | 1.25 | [2.34, 7.25] | 0.21 | 3.83 | <0.001 |
| **Place of Residence=District** | 2.20 | 1.22 | [-0.19, 4.60] | 0.09 | 1.81 | 0.071 |
| **Place of Residence=Town** | 0.08 | 2.66 | [-5.15, 5.30] | 0.001 | 0.03 | 0.977 |
| **Place of Residence=Village** | -4.71 | 1.82 | [-8.29, -1.13] | -0.12 | -2.58 | 0.010 |
| **Previous access to childbirth information=No** | -2.02 | 1.13 | [-4.25, 0.20] | -0.08 | -1.78 | 0.075 |
| **Preferred method of delivery for future births=Cesarean section** | 3.38 | 1.33 | [0.76, 6.00] | 0.12 | 2.54 | 0.012 |

*$F(8, 434)=5.12$, $p<0.001$, $R^2=0.09$.*
*Note: B = unstandardized regression coefficient; SE = standard error; 95% CI=95% confidence interval; β=standardized regression coefficient; t=t-statistic; p=significance level; F=model fit test (ANOVA); $R^2$=coefficient of determination. Reference categories: Gender=Male, Faculty=Engineering, Place of Residence=Province, Previous access to childbirth information=Yes, Preferred method of future delivery=Normal vaginal delivery.*

## DISCUSSION

In this study, the fear of childbirth and preferences regarding mode of delivery among students at the Faculty of Health Sciences and Engineering were compared, and it was assessed whether these variables differed according to field of study. The findings indicate that fear of childbirth and preferences regarding mode of delivery may be associated with individual and educational factors, and the results were discussed in light of the relevant literature.

In our study, the higher rate of knowledge about childbirth among students in the Faculty of Health Sciences is consistent with similar studies in the literature. A systematic review of studies conducted on university students has shown that awareness of fertility and childbirth is generally at a low-to-moderate level, but tends to be higher among students in the medical and health fields (16). Similarly, studies comparing students from different fields of study have reported that students enrolled in health sciences-related programs have a higher level of knowledge on topics such as reproductive health (17) and breastfeeding (18). Health education is one of the most powerful factors explaining disparities in health knowledge. For students majoring in fields other than health, gaps in curriculum-based knowledge have been identified as the primary barrier to acquiring health knowledge (19). For this reason, the higher proportion of engineering students who do not acquire knowledge may stem not only from individual disinterest but also from structural differences in education.

The fact that students in the Faculty of Health Sciences primarily acquire their knowledge through school suggests that field-specific education shapes perceptions of childbirth. Indeed, studies showing differences in knowledge between health and non-health students demonstrate that formal education enhances health literacy (20). Conversely, it has been shown that young people's views on childbirth are strongly influenced not only by school but also by their families, friends, the media, and social media (21,22). In the study by Palumbo et al., family and the media were identified as the primary sources of information about childbirth among students (21). Among those who learned about childbirth from friends, there was a higher level of interest in midwife-supported care and community-based childbirth options (22). Although social media provides quick access to information, it can negatively influence perceptions of childbirth due to inaccurate or fear-mongering content (23).

In our study, pre-pregnancy fear of childbirth scores among students in the Faculty of Engineering showed significant differences according to certain variables. The mean fear of childbirth score for female students (39.4±12.7) was significantly higher than that of male students (34.9±10.3) (t=-3.005; p=0.003). Furthermore, in the multiple linear regression analysis conducted

Turk J Clin Res. 2026;2(2):137-147
https://doi.org/10.63909/1453054

in our study to examine the factors predicting pre-pregnancy fear of childbirth, female gender was found to be a significant predictor of fear of childbirth, and female students' levels of fear of childbirth were determined to be higher than those of male students (B=4.79; 95% CI [2.34; 7.25]; β=0.21; p<0.001). This finding is consistent with studies in the literature. In a study conducted with 3.680 university students to examine the prevalence of fear of childbirth, the factors influencing this fear, and how it affects preferences for mode of delivery, it was found that 1 in every 7 female students exhibited significant fear of childbirth. Among male students, this rate was reported to be less than 4% (24). Similarly, in the study by Xu et al. (25), it was reported that female students' levels of fear of childbirth were significantly higher than those of male students. The same study also showed that the levels of fear of childbirth among individuals who did not want to have children or were undecided about having children were significantly higher than those of participants who planned to have children (25). It is thought that women's higher levels of fear compared to men may be related to the fact that, because they will directly experience the birthing process, they experience more intense anxiety regarding pain, complications, and physical changes.

Our study found that fear of childbirth scores varied by place of residence; in particular, it was determined that the average score for students living in district centers was higher than that for students living in villages. In the multiple linear regression analysis, when those living in the provincial center were used as the reference group, it was observed that the fear of childbirth scores of students living in villages were significantly lower (B=-4.71; 95% CI: -8.29 to -1.13; p=0.010). Similar to our study, a study comparing urban and rural areas in Turkey reported that women living in urban areas had higher levels of fear of childbirth than those living in rural areas. Furthermore, the same study emphasized that place of residence influences perceptions regarding childbirth and the associated level of fear (26). This situation can be explained by the fact that individuals living in rural areas perceive the birthing process as a natural part of daily life and are more frequently exposed to experiences related to childbirth in their surroundings. However, further research is needed to identify the underlying causes of this relationship in greater detail. This is because the literature indicates that fear of childbirth is influenced by many factors, such as expectations of pain, previous traumatic experiences, psychological state, social support, and economic conditions. Therefore, when assessing fear of childbirth, it is important to consider not only sociodemographic variables but also psychosocial and cultural factors (11,12).

Our study's finding that normal vaginal delivery is the predominant preference at both faculties is largely consistent with the existing literature. Large-scale studies conducted among university students have reported that the majority prefer vaginal delivery, while the preference for cesarean delivery remains at lower rates. 91.2% of the students selected vaginal delivery as the "best" method of delivery, while 75.5% selected it as the "preferred" method. Being male, having had a vaginal delivery, and being a health sciences student were associated with a preference for vaginal delivery (27). It has also been reported that being a health sciences student increases the likelihood of choosing vaginal delivery, while a high level of knowledge is associated with fewer cesarean sections chosen without medical necessity (27,28). While 68% of medical students believe that vaginal delivery results in fewer complications than cesarean section, a large proportion of midwifery students (96.2%) agree that vaginal delivery is a safer option than cesarean section for women at low risk of complications (28). However, in our study, the higher rate of planned cesarean sections among engineering students may be associated with a lack of knowledge among students outside the health field, fear of childbirth, and a higher acceptance of medical intervention.

It is well known that birth preferences are shaped not only by information but also by fear, expectations of pain, and cultural context. Our study's findings indicate that among those who indicated a preference for cesarean delivery, the fear of childbirth score was higher than among those who preferred normal vaginal delivery (B=3.38; 95% CI [0.76; 6.00]; β=0.12; p=0.012). In a study conducted by Stoll and colleagues to assess university students' attitudes toward vaginal and cesarean delivery, it was shown that the preference for cesarean section among university students was particularly associated with fear of labor pain and low confidence in vaginal delivery (29). At the same time, the literature indicates that fear of childbirth is one of the most significant factors contributing to requests

Turk J Clin Res. 2026;2(2):137-147
https://doi.org/10.63909/1453054

for cesarean sections and the preference for elective cesarean sections (30,31).

Our study found that the type of faculty (Faculty of Health Sciences and Faculty of Engineering) was not a significant predictor of pre-pregnancy fear of childbirth. This finding suggests that education in the health field alone may not be sufficient to reduce fear of childbirth. Indeed, in a study conducted by Rüzgar and colleagues on nursing students, no significant association was found between having taken a course in obstetrics and gynecology nursing and the level of fear of childbirth. In contrast, it has been reported that negative experiences during clinical practice can increase fear of childbirth (32). In this regard, it can be said that the fear of childbirth is related not only to the faculty where one studies but also to multidimensional factors such as the scope of the education provided, clinical experiences, and individual psychosocial characteristics.

### Limitations

This study has several limitations. First, its single-center design may limit the generalizability of the findings to students at other universities or in different sociocultural settings. Second, the cross-sectional design does not allow causal relationships to be established. Third, the data were based on self-report and may therefore be subject to response and social-desirability bias. Finally, the unequal distribution of participants across faculties and genders may have affected group comparisons and should be considered when interpreting the findings.

## CONCLUSION

Fear of childbirth should be recognized as a multidimensional phenomenon that can be present even before pregnancy and is associated with individual, educational, and psychosocial factors. Providing accurate information during the student years, fostering positive perceptions of childbirth, and encouraging informed decision-making may help reduce childbirth-related fears and support healthier attitudes toward childbirth. In this context, midwives play a key role in providing evidence-based education, counseling, and health promotion interventions before pregnancy. Strengthening preconception education and integrating childbirth-related content into educational settings may help foster positive expectations regarding childbirth and support future reproductive health.

**Acknowledgement:** None.

**Ethical Approval:** Ethical approval was obtained pursuant to Decision No. 2022/04-35 of the Karabük University Ethics Committee for Social and Humanities Research, dated May 11, 2022. The research was conducted in accordance with the principles of the Declaration of Helsinki. Participation in the study was voluntary.

**Author Contributions:** Idea/ Concept: B.C., K.N.K., R.A.D., S.H., M.K., F.E.A.; Design: B.C., K.N.K., R.A.D., S.H., M.K., F.E.A.; SUPERVISION: B.C., K.N.K., R.A.D., S.H..; Resources: B.C., K.N.K., R.A.D., S.H.; Materials: B.C., K.N.K., R.A.D., S.H., M.K., F.E.A.; Data Collection and/or Processing M.K., F.E.A.; Analysis and/or Interpretation: B.C., K.N.K., R.A.D., S.H.; Literature Review: B.C., K.N.K., R.A.D., S.H., M.K., F.E.A.; Written By: B.C., K.N.K., R.A.D., S.H.; Critical Review: B.C., K.N.K., R.A.D., S.H., M.K., F.E.A.

**Conflict of Interest:** The authors declare that there are no conflicts of interest in this study.

**Financial Disclosure:** No financial support was received for this research.

## REFERENCES

1. Wigert H, Nilsson C, Dencker A, Begley C, Jangsten E, Sparud-Lundin C, et al. Women's experiences of fear of childbirth: a metasynthesis of qualitative studies. Int J Qual Stud Health Well-being. 2020;15(1):1704484.
2. Demšar K, Svetina M, Verdenik I, Tul N, Blickstein I, Globevnik Velikonja V. Tokophobia (fear of childbirth): prevalence and risk factors. J Perinat Med. 2018;46(2):151-4.
3. Kananikandeh S, Amin Shokravi F, Mirghafourvand M, Jahanfar S. Factors of the childbirth fear among nulliparous women in Iran. BMC Pregnancy Childbirth. 2022;22(1):547.
4. Demšar K, Svetina M, Verdenik I, Tul N, Blickstein I, Globevnik Velikonja V. Tokophobia (fear of childbirth): prevalence and risk factors. J Perinat Med. 2018;46(2):151-4.
5. Imakawa CSO, Nadai MN, Reis M, Quintana SM, Moises ECD. Is it necessary to evaluate fear of childbirth in pregnant women? A scoping review. Rev Bras Ginecol Obstet. 2022;44(7):692-700.

Turk J Clin Res. 2026;2(2):137-147
https://doi.org/10.63909/1453054

6. Mohamamdirizi S, Mohamadirizi M, Mohamadirizi S. The comparison of fear of childbirth and sense of coherence among low-risk and high-risk pregnancy women. J Educ Health Promot. 2018;7:143.
7. Khosravi P, Pirdadeh Beiranvand S, Beiranvand B, Khalesi ZB. Relationship between primigravid women's awareness, attitude, fear of childbirth, and mode of delivery preference. Eur J Obstet Gynecol Reprod Biol X. 2022;14:100143.
8. World Health Organization. Caesarean section rates continue to rise, amid growing inequalities in access [Internet]. 2021 [cited 2026 Jul 9]. Available from: https://www.who.int/news/item/16-06-2021-caesarean-section-rates-continue-to-rise-amid-growing-inequalities-in-access.
9. World Health Organization. Caesarean sections should only be performed when medically necessary says WHO [Internet]. 2015 [cited 2026 Jul 9]. Available from: https://www.who.int/news/item/09-04-2015-caesarean-sections-should-only-be-performed-when-medically-necessary-says-who.
10. Hacettepe Üniversitesi Nüfus Etütleri Enstitüsü. Türkiye Nüfus ve Sağlık Araştırması 2018 [Internet]. Ankara: Hacettepe Üniversitesi Nüfus Etütleri Enstitüsü; 2018 [cited 2025 Sep 30]. Available from: https://fs.hacettepe.edu.tr/hips/dosyalar/Ara%C5%9Ft%C4%B1rmalar%20-%20raporlar/2018%20TNSA/TNSA2018_ana_Rapor_compressed.pdf.
11. Erbil N, Boyraz Yanık HG, Yıldız G. Personality traits, stress, anxiety, depression levels, fear of childbirth, and affecting factors in Turkish university students. Depress Anxiety. 2025;2025:5130737.
12. Serçekuş P, Vardar O, Özkan S. Fear of childbirth among pregnant women and their partners in Turkey. Sex Reprod Healthc. 2020;24:100501.
13. Elgzar WT, Alshahrani MS, Ibrahim HAF. Mode of delivery preferences: the role of childbirth fear among nulliparous women. Front Psychol. 2023;14:1221133.
14. Stoll K, Hauck Y, Downe S, Edmonds J, Gross MM, Malott A, et al. Cross-cultural development and psychometric evaluation of a measure to assess fear of childbirth prior to pregnancy. Sex Reprod Healthc. 2016;8:49-54.
15. Uçar T, Taşhan ST. Gebelik öncesi doğum korkusu ölçeğinin Türkçe uyarlaması: kadın ve erkeklerde geçerlik ve güvenirlik çalışması. Acıbadem Üniversitesi Sağlık Bilim Derg. 2018;(3):289-96.
16. Ren Y, Xie Y, Xu Q, Long M, Zheng Y, Li L, et al. University students' fertility awareness and its influencing factors: a systematic review. Reprod Health. 2023;20(1):85.
17. Wulandari R, Aprianti A, Waluyo DE. Differences in levels of knowledge and attitudes about reproductive health among students of the Faculty of Health and non-health faculties in Semarang City. VISIKES. 2023;22(1):65-72.
18. Petravičiūtė Ž, Austys D. Knowledge and attitudes towards breastfeeding among students with various study backgrounds. Eur J Public Health. 2025;35(Suppl 4):1698.
19. Xiang W, Cao H, Wu J, Chen P, Chen Q, Tao F, et al. College students' cognition and attitude toward medical knowledge education after a global public health event. Front Public Health. 2025;13:1606919.
20. Lubis M, Rozi MP. Knowledge, attitudes, and motivation regarding exclusive breastfeeding between medical and nonmedical students: a cross-sectional study. Makara J Health Res. 2025;29(1):67-73.
21. Palumbo CS, Hsu R, Tomkinson J, Klein MC. Pre-university students' attitudes and beliefs about childbirth: implications for reproductive health and maternity care. Can J Midwifery Res Pract. 2012;11(2):27-37.
22. Stoll KH, Downe S, Edmonds J, Gross MM, Malott A, McAra-Couper J, et al. A survey of university students' preferences for midwifery care and community birth options in 8 high-income countries. J Midwifery Womens Health. 2020;65(1):131-41.
23. İsbir GG, Guner S, Beşen MA, Thomson G. Evaluation of labour and birth education by midwifery educators: a qualitative study from Turkey. Nurse Educ Pract. 2023;66:103515.
24. Stoll K, Hall W, Janssen P, Carty E. Why are young Canadians afraid of birth? A survey study of childbirth fear and birth preferences among Canadian university students. Midwifery. 2014;30(2):220-6.
25. Xu J, Li L, Ma XQ, Zhang M, Qiao J, Redding SR, et al. Fertility intentions, parenting attitudes, and fear of childbirth among college students in China: a cross-sectional study. J Pediatr Adolesc Gynecol. 2023;36(1):65-71.
26. Okumus F, Sahin N. Fear of childbirth in urban and rural regions of Turkey: comparison of two resident populations. North Clin Istanb. 2017;4(3):247-56.
27. Knobel R, Takemoto MLS, Andreucci CB, Docusse Jr P, McKinley DW, Amaral E. Factors associated with preference for vaginal birth among undergraduate students from Southern Brazil. Birth. 2016;43(3):263-7.
28. Michalik A, Czerwińska-Osipiak A, Szablewska A, Pracowity M, Olszewska J. Factors associated with vaginal/cesarean birth attitudes among medical students. Healthcare (Basel). 2022;10(3):571.
29. Stoll K, Fairbrother N, Carty E, Jordan N, Miceli C, Vostrcil Y, et al. "It's all the rage these days": university students' attitudes toward vaginal and cesarean birth. Birth. 2009;36(2):133-40.
30. Kanellopoulos D, Gourounti K. Tocophobia and women's desire for a caesarean section: a systematic review. Maedica (Bucur). 2022;17(1):186-93.
31. Nieminen K, Stephansson O, Ryding EL. Women's fear of childbirth and preference for cesarean section--a cross-sectional study at various stages of pregnancy in Sweden. Acta Obstet Gynecol Scand. 2009;88(7):807-13.
32. Ruzgar E, Gürlek Kisacik Ö. Pre-pregnancy fear of childbirth in Turkish nursing students: how does the obstetrics and gynecology nursing lesson affect this fear? Int J Caring Sci. 2022;15(1):406-16.