

## Original Article

# Predictors of Prenatal Distress and Fear of Childbirth among Nulliparous and Parous Women

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### ABSTRACT

**Background:** Prenatal distress and fear of childbirth negatively affect the health of the mother and the fetus. Sociodemographic and pregnancy related characteristics may influence prenatal distress and fear of childbirth. **Aim:** This study aimed to explore the relationship between fear of childbirth and prenatal distress levels with accompanying factors. **Subjects and Methods:** The study was designed as a cross-sectional survey study and conducted in the outpatient clinic of Obstetrics and Gynecology Department of Pamukkale University Hospital, Denizli, Turkey, between April 2017 and January 2018. Survey data were collected from 103 third-trimester pregnant women who had admitted to the hospital for routine prenatal examination. Sociodemographic Information Form, the Revised Prenatal Distress Questionnaire (NUPDQ), and the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) were used to collect data. Sociodemographics, obstetrics, and other variables were summarized by descriptive statistics. Mann-Whitney U-test, Chi-squared test, and Fisher's exact test were used for comparison of data between groups. **Results:** The mean score of NUPDQ was 7.58 (SD 4.09) in the nulliparous group and 8.17 (SD 5.16) in the multiparous group ( $P = 0.68$ ). The mean W-DEQ score was 40.46 (SD 21.80) in nulliparous women and 45.55 (SD 26.72) in multiparous women ( $P = 0.38$ ). The W-DEQ and NUPDQ scores were moderately correlated with a Spearman correlation co-efficient of 0.58 ( $P < 0.001$ ). **Conclusions:** The results of this study revealed that fear of childbirth and prenatal distress were moderately and positively correlated. NUPDQ and W-DEQ can be used during pregnancy to understand if pregnant women have fear or distress. This could help to give a better support to pregnant women.

**KEYWORDS:** *Fear of childbirth, NUPDQ, pregnancy, prenatal distress, W-DEQ*

## INTRODUCTION

The prenatal period is a special time for a pregnant woman. It may be a pleasant anticipation for some, but for many, it may be a stressful period with prenatal distress, anxiety or prenatal depression.<sup>[1]</sup> During this time, women are anxious about their existing medical problems, physical symptoms, bodily changes, labor and delivery, and the health of the newborn baby.<sup>[2]</sup> Some women easily adapt to these changes whereas others may not cope with newfound stressors and may experience psychological problems.

In the last decade, studies pointing out the significance of psychological problems in pregnancy have

increased progressively.<sup>[3,4]</sup> It has been reported in different studies that 10-30% of pregnant women suffer from depression and depressive symptoms.<sup>[5,6]</sup> Data about prenatal anxiety is more limited compared to depression, and there is a large discrepancy between studies. Andersson *et al.* reported that anxiety disorders were encountered in 6.6% of patients, whereas in other studies it was found to be between

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10,4 and 15,6%.<sup>[5,7,8]</sup> Prevalences vary between studies according to study methodology and screening or diagnostic instruments.

To highlight the importance of the issue, the unresolved psychological problems of pregnancy and cumulative psychological stress have been found to be related with prenatal or postpartum depression.<sup>[9]</sup> Also, there is enough evidence to suggest that the stress that exists during pregnancy may negatively influence the health of the mother, the fetus and the newborn baby. Many studies have shown that if a pregnant woman is depressed, anxious or distressed during pregnancy, there is increased risk for her child for having emotional problems, symptoms of hyperactivity disorder or impaired cognitive development.<sup>[10,11]</sup> Because of all these adverse effects of prenatal stress and anxiety, women who are suffering from psychological problems should be identified and treated. However, identification of patients with prenatal anxiety and depression is difficult because symptoms of anxiety and depressive disorders are similar to the somatic complaints of normal pregnancy such as sleep disturbances, fatigue, appetite, and weight changes.<sup>[12,13]</sup> Therefore, this problem is not routinely taken into consideration in everyday obstetric practice, and its influence on maternal health is likely underestimated.<sup>[14]</sup>

Previous studies related to fear of childbirth and psychological disorders have found an association between fear, anxiety, and depression.<sup>[15-17]</sup> However, Molgora *et al.* reported that the relationship is complex and pointed out that fear of childbirth is generally positively associated—but not overlapped—neither with anxiety nor with depression.<sup>[18]</sup> Young maternal age, preexisting mental problems, nulliparity, obstetric complications, and lack of social support are related to increased prevalence of fear of childbirth.<sup>[19]</sup> Parity is an important factor for fear. Rouhe *et al.* reported that nulliparous women's fear is mainly derived from the unknown pain that will be faced in the future, whereas multiparous women's fear depends on their past delivery experiences.<sup>[20]</sup>

Although the numbers of research about prenatal distress and fear of childbirth have increased in recent years, current evidence shows that there is a need for studies that clarify the relationship between distress and fear of childbirth and associated factors.<sup>[21,22]</sup> The primary aim of this study was to explore the relationship between fear of childbirth and prenatal distress levels. The second aim was to identify factors associated with high prenatal psychosocial stress and fear of childbirth.

## MATERIALS AND METHODS

### Study sample and population

This study was designed as a cross-sectional survey study and conducted in the outpatient clinic of Obstetrics and Gynecology Department of Pamukkale University Hospital, Denizli, Turkey. From April 2017 until January 2018, third trimester pregnant women admitted to the outpatient clinic of the hospital for routine prenatal examination formed the universe of the study. A power analysis was performed before the study for sample size estimation based on data from the previous study by Jokic-Begic *et al.*<sup>[23]</sup> using G\*Power (v3.1.9.2) software.<sup>[24]</sup> To obtain a power of 80% at a 5% significance level with a medium effect size ( $d = 0.503$ ), a sample of 100 participants were required. Power analysis showed that the sample size should be at least 50 nulliparous women and 50 multiparous women for groups.

All the pregnant women who were in the last trimester of pregnancy were approached and asked whether they would participate in the study or not. 103 volunteer patients accepted to participate in the study, and this population formed the study group. All the women were informed about the research and the procedures. Inclusion criteria for the study were to be greater than 28 weeks of gestational age, to be able to speak and write Turkish and to be 18-45 years old. Women with pregnancy complications (e.g., preeclampsia, gestational diabetes, preterm labor, maternal hemorrhage, placenta previa, oligohydramnios), fetal malformation and chronic illnesses were excluded from the study. None of the patients had a cesarean section in previous pregnancy or pregnancies.

### Data collection

After the informed consent was obtained, voluntary participants were invited to a private consultation room. Three forms, demographic data form, the Revised Prenatal Distress Questionnaire (NUPDQ), and the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) were used to collect data. The forms and questionnaires were filled by face to face interview by one of the researchers.

### Measures

#### Sociodemographic data form

The questionnaire which was developed by the researchers consists of questions related to the participants' socio-demographic and pregnancy characteristics. The questionnaire items were age, educational level, employment status, family economic status, partner support, social support by family, type of family, gestational age, previous pregnancies and

delivery history, complications during the current pregnancy, the desired delivery mode (vaginal delivery or cesarean section), and the desire for the current pregnancy.

### **The Revised Prenatal Distress Questionnaire (NUPDQ)**

The original version of the Prenatal Distress Questionnaire (PDQ) was a self-administered 12-item measure.<sup>[2]</sup> The revised version of the Prenatal Distress Questionnaire (NUPDQ), was modified for interview format and was used to assess pregnancy-related distress in this study.<sup>[25]</sup> It contains 17 short items. The revised version of the Prenatal Distress Questionnaire and its predecessor, the Prenatal Distress Questionnaire, have been shown to have high internal consistency and predictive validity in pregnant women.<sup>[26]</sup> Participants rated their current feelings about different conditions for pregnancy on a 3-point scale that ranges from 0 (not at all) to 2 (very much). The minimum score is 0 and the maximum 34. A total NUPDQ score for each participant was calculated by summing item responses, and a high score indicates high prenatal-distress levels.<sup>[25]</sup> Yüksel *et al.* conducted the validity and reliability study for the Turkish language.<sup>[27]</sup> In this study, the internal consistency of the instrument was high (Cronbach's  $\alpha = 0.85$ ), suggesting that the Turkish version of NUPDQ is a reliable and valid tool for the assessment of stress levels of Turkish pregnant women.

### **The Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ)**

The Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) is a standardized screening method for measuring fear of childbirth during pregnancy.<sup>[28]</sup> It is a self-assessment scale which consists of 33-item, with a 6-point Likert scale. Each response is rated from 0 "extremely," to 5 "not at all." The total score is in the range between 0 and 165. W-DEQ sum 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.<sup>[29,30]</sup> Validity and reliability study for the Turkish language was conducted by Körükcü *et al.* with women in the last trimester of pregnancy.<sup>[31]</sup> Internal consistency coefficient for W-DEQ was 0.89 suggesting that Turkish version of W-DEQ is reliable and valid for measuring fear of childbirth.<sup>[31]</sup> In the current study, Cronbach's alpha was found 0.91, suggesting good internal reliability.

### **Ethical considerations**

The study was approved by the Institutional Ethics Committee of the Pamukkale University Medical School (approval number: 60116787-020/21091). All pregnant

women read and signed informed consent forms declaring that they voluntarily participated in the study.

### **Statistical analysis**

Descriptive statistics including frequencies, means, standard deviations, medians, and min-max values were calculated to summarize socio-demographics, obstetrics, and other variables. Internal reliability for W-DEQ was tested through Cronbach's alpha coefficients. The normality of variables was tested using the Kolmogorov-Smirnov test. Mann-Whitney U test or Kruskal-Wallis test was used for comparing non-normally distributed variables. Categorical variables were evaluated using the Chi-square test or Fisher's exact Chi-square test. Mann-Whitney U-test was used to determine differences in W-DEQ and NUPDQ scores between the groups. Spearman's correlation coefficients were used to investigate the associations between scores on the continuous measure of the W-DEQ and the NUPDQ. Data were analyzed using the Statistical Package for Social Sciences software, (SPSS, version, 23: IBM Corporation, Somers, NY, USA).  $P < 0.05$  was considered to indicate statistical significance.

## **RESULTS**

A total of 103 pregnant women with gestational age ranging from 28 to 40 weeks were recruited. About 48.5% of pregnant women were nulliparous ( $n = 50$ ), and 51.5% were multiparous ( $n = 53$ ). Mean maternal age was 27.67 years (SD 5.72), and 39.9% of pregnant women were equal to or below 25 years, 46.6% were between 26 and 34 years, and 13.6% were equal or above 35 years old. Demographic and socioeconomic characteristics of participants were presented in Table 1. The mean gestational age was 33.98 weeks (SD 4.23) in the nulliparous group and 32.92 weeks (SD 4.16) in the multiparous group at the time of interview. Concerning educational level, 45.6% completed primary, 23.3% completed secondary, and 31.1% completed a university degree education in the combined group. 97.1% of the women were married, and 83.5% of participants were living in a nuclear family, whereas 16.5% were living in an extended family. 34.0% of pregnant multiparous women had one child, 12.6% had two children, 2.9% had three children, and 1.9% had more than four children. Nearly all of the nulliparous women (94.0%) had a planned or a desired pregnancy, but in the multiparous group, planned pregnancies were lower (71.7%). Partner support during pregnancy was higher in nulliparous group than the multiparous group, 98.0% to 94.3% respectively. 67.9% of pregnant multiparous women were desiring to give birth by cesarean section, whereas 56.0% of nulliparous women

**Table 1: Characteristics of the participants regarding parity**

| Characteristics                                       | Nulliparous  | Multiparous  | P       |
|---|--------------|--------------|---------|
|   | n=50 (%)     | n=53 (%)     |         |
| Years of age; mean [SD]                               | 25.12 [4.73] | 30.08 [5.58] | <0,001* |
| Age groups  |              |              |         |
| ≤25 years   | 26 (52.0)    | 15 (28.3)    | <0,001* |
| 26-34 years   | 23 (46.0)    | 25 (47.2)    |         |
| ≥35 years   | 1 (2.0)      | 13 (24.5)    |         |
| Gestational age weeks; mean [SD]                      | 33.98 [4.23] | 32.92 [4.16] | 0.17    |
| Gestational age (weeks)                               |              |              |         |
| 28-30   | 13 (26.0)    | 20 (37.7)    | 0,35    |
| 31-33   | 9 (18.0)     | 8 (15.1)     |         |
| 34-37   | 13 (26.0)    | 16 (30.2)    |         |
| ≥38   | 15 (30.0)    | 9 (17.0)     |         |
| Educational level                                     |              |              |         |
| Primary school  | 17 (34.0)    | 30 (56.6)    | 0.06    |
| High school   | 15 (30.0)    | 9 (17.0)     |         |
| University  | 18 (36.0)    | 14 (26.4)    |         |
| Employment  |              |              |         |
| Employed  | 30 (60.0)    | 24 (45.3)    | 0.59    |
| Unemployed  | 20 (40.0)    | 29 (54.7)    |         |
| Annual Family Income†                                 |              |              |         |
| 18000   | 27 (54.0)    | 25 (47.2)    | 0.78    |
| 18000-36000   | 17 (34.0)    | 21 (39.6)    |         |
| 36000   | 6 (12.0)     | 7 (13.2)     |         |
| Partner support                                       |              |              |         |
| Yes   | 49 (98.0)    | 50 (94.3)    | 0,62    |
| No  | 1 (2.0)      | 3 (5.7)      |         |
| Social support by family                              |              |              |         |
| Yes   | 48 (96.0)    | 37 (89.8)    | <0,001* |
| No  | 2 (4.0)      | 16 (30.2)    |         |
| Cigarette smoking                                     |              |              |         |
| Yes   | 1 (2.0)      | 8 (15.1)     | 0,03    |
| No  | 49 (98.0)    | 45 (84.9)    |         |
| Desired/Planned Pregnancy                             |              |              |         |
| Yes   | 47 (94.0)    | 38 (71.7)    | <0.01*  |
| No  | 3 (6.0)      | 15 (28.3)    |         |
| Preferred delivery mode                               |              |              |         |
| Vaginal   | 22 (44.0)    | 17 (32.1)    | 0.21    |
| Caesarean   | 28 (56.0)    | 36 (67.9)    |         |
| Concerns or fears about labor or delivery             |              |              |         |
| Present   | 22 (44.0)    | 17 (32.1)    | 0.04*   |
| Not present   | 28 (56.0)    | 36 (67.9)    |         |
| Concerns or fears about taking care of a newborn baby |              |              |         |
| Present   | 10 (20.0)    | 5 (9.4)      | 0.13    |
| Not present   | 40 (80.0)    | 48 (90.6)    |         |

\*Statistically significant,  $P<0.05$ . † In Turkish Liras (1 U.S. dollar equals approximately 5.5 Turkish Liras). Statistical analysis was performed by Mann-Whitney U-test, Chi-square test and Fisher's exact test according to the variables

**Table 2: W-DEQ and NUPDQ scores in nulliparous and multiparous women**

| Scales         | Nulliparous (n=50) |                  | Multiparous (n=53) |                  | P    |
|----------------|--------------------|------------------|--------------------|------------------|------|
|                | Mean±SD            | Median (min-max) | Mean±SD            | Median (min-max) |      |
| W-DEQ (scores) | 40.46 (21.80)      | 35.5 (7-114)     | 45.55 (26.72)      | 45.0 (5-152)     | 0.38 |
| NUPDQ (scores) | 7.58 (4.09)        | 6.5 (0-19)       | 8.17 (5.16)        | 8.0 (0-26)       | 0.68 |

Statistically significant,  $P<0.05$ ; SD, standard deviation; W-DEQ: The Wijma Delivery Expectancy/Experience Questionnaire; NUPDQ: The Revised Prenatal Distress Questionnaire

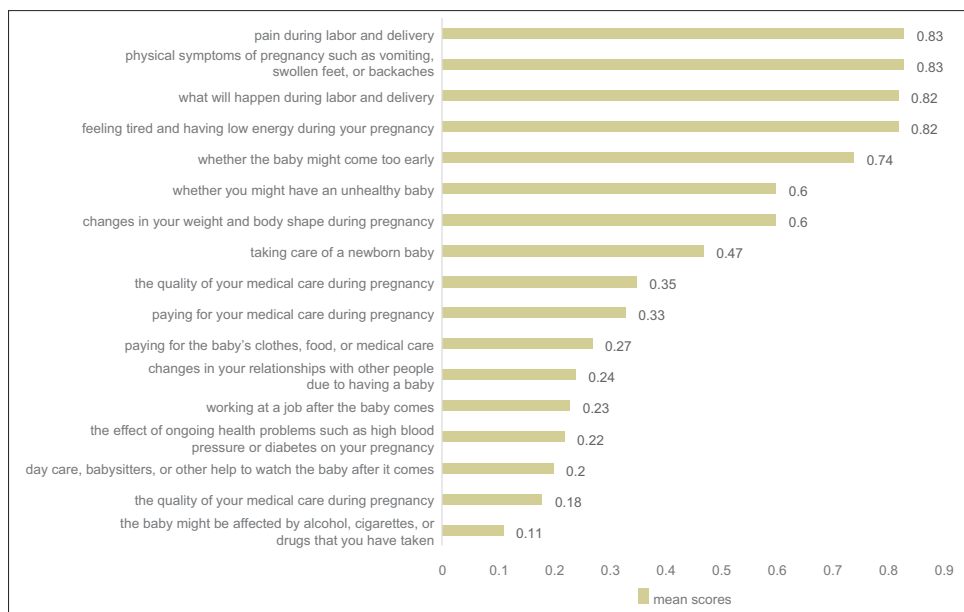


Figure 1: The mean responses for the Revised Prenatal Distress Questionnaire (NUPDQ) items: ranking of mean responses (n: 103)

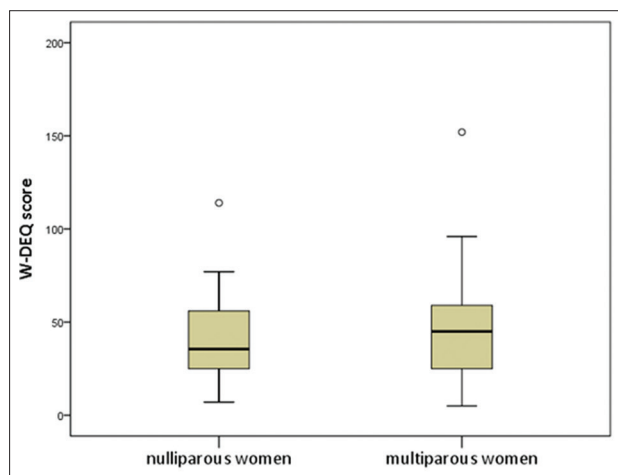


Figure 2: W-DEQ scores between the groups

preferred cesarean delivery. Unexpectedly, the presence of concerns or fears about labor and delivery was higher in multiparous women (49.1%) compared to nulliparous women (30.0%).

The mean score of Prenatal Distress Questionnaire was 7.58 (SD 4.09) in the nulliparous group and 8.17 (SD 5.16) in the multiparous group showing no statistical significance ( $P = 0.68$ ) [Table 2]. The mean responses for all 17 items within the NUPDQ are presented in Figure 1. The most frequently seen items that cause distress in pregnant women are listed as, pain during labor and delivery, unpleasant physical symptoms of pregnancy, anxiety about delivery and tiredness with low energy during pregnancy.

The mean W-DEQ score was 40.46 (SD 21.80) in nulliparous women and 45.55 (SD 26.72) in multiparous

Table 3: W-DEQ scores of women according to subgroups

| W-DEQ                       | Nulliparous |            | Multiparous |            |
|-----------------------------|-------------|------------|-------------|------------|
|                             | n=50        | Percentage | n=53        | Percentage |
| ≤37 (mild fear level)       | 27          | 54.0       | 23          | 43.4       |
| 38-65 (moderate fear level) | 15          | 30.0       | 20          | 37.7       |
| 66-84 (severe fear level)   | 7           | 14.0       | 7           | 13.2       |
| ≥85 (clinical fear)         | 1           | 2.0        | 3           | 5.7        |

W-DEQ: The Wijma Delivery Expectancy/Experience Questionnaire

Table 4: The relationship between fear of childbirth and pregnancy distress level

| Scales | W-DEQ       |         |             |         |          |         |
|--------|-------------|---------|-------------|---------|----------|---------|
|        | Nulliparous |         | Multiparous |         | Combined |         |
|        | r           | P       | r           | P       | r        | P       |
| NUPDQ  | 0.56        | <0.001* | 0.57        | <0.001* | 0.58     | <0.001* |

\*Statistically significant,  $P < 0.05$ ; r=Spearman's correlation coefficient; W-DEQ: Wijma Delivery Expectancy/Experience Questionnaire; NUPDQ: The Revised Prenatal Distress Questionnaire

women [Table 2]. A box plot of W-DEQ scores among the groups was presented in Figure 2. Multiparous women had a higher mean W-DEQ score compared to nulliparous women, but there was no statistically significant difference in the W-DEQ scores between groups ( $P = 0.38$ ). W-DEQ scores of nulliparous and multiparous women are listed in Table 3 according to subgroups. The number of women with clinical fear of childbirth (W-DEQ score  $\geq 85$ ) was 4 (3.9%) when both groups were evaluated together.

Scores of the W-DEQ and NUPDQ were not normally distributed with a median of 38.0, ranging from 5 to 152 with a mean of 43.08 (SD = 24.47) and median of 7.0,

**Table 5: Relationship between the women's sociodemographic variables and W-DEQ and NUPDQ scores**

| Characteristics           | W-DEQ     |                  |                 | NUPDQ     |                  |             |
|---------------------------|-----------|------------------|-----------------|-----------|------------------|-------------|
|                           | Mean Rank |                  | P               | Mean Rank |                  | P           |
| Age groups                |           |                  |                 |           |                  |             |
| ≤25 years                 | 59,4      | $\chi^2$ * 5,599 | 0,06            | 52,2      | $\chi^2$ * 0,150 | 0,93        |
| 26-34 years               | 44,6      |                  |                 | 51,0      |                  |             |
| ≥35 years                 | 55,4      |                  |                 | 54,5      |                  |             |
| Gestational age (weeks)   |           |                  |                 |           |                  |             |
| 28-30                     | 56,1      | $\chi^2$ * 1.051 | 0,79            | 55,4      | $\chi^2$ * 1.029 | 0,79        |
| 31-33                     | 48,2      |                  |                 | 47,9      |                  |             |
| 34-37                     | 50,1      |                  |                 | 52,9      |                  |             |
| ≥38                       | 51,2      |                  |                 | 49,0      |                  |             |
| Educational level         |           |                  |                 |           |                  |             |
| Primary school            | 51,9      | $\chi^2$ * 1.839 | 0,40            | 52,0      | $\chi^2$ * 0,005 | 0,99        |
| High school               | 58,3      |                  |                 | 52,2      |                  |             |
| University                | 47,3      |                  |                 | 51,7      |                  |             |
| Employment                |           |                  |                 |           |                  |             |
| Employed                  | 46,9      | Z** -1,494       | 0,13            | 51,2      | Z** -0,228       | 0,82        |
| Unemployed                | 55,8      |                  |                 | 52,5      |                  |             |
| Annual Family Income†     |           |                  |                 |           |                  |             |
| 18000                     | 56,4      | $\chi^2$ * 3,075 | 0,21            | 54,7      | $\chi^2$ * 1,077 | 0,58        |
| 18000-36000               | 49,5      |                  |                 | 50,3      |                  |             |
| 36000                     | 41,2      |                  |                 | 46,0      |                  |             |
| Partner support           |           |                  |                 |           |                  |             |
| Yes                       | 51,8      | Z** -0,188       | 0,85            | 52,0      | Z** -0,017       | 0,99        |
| No                        | 54,7      |                  |                 | 51,7      |                  |             |
| Social support by family  |           |                  |                 |           |                  |             |
| Yes                       | 49,4      | Z** -1,863       | 0,06            | 51,0      | Z** -0,723       | 0,47        |
| No                        | 63,9      |                  |                 | 56,6      |                  |             |
| Cigarette smoking         |           |                  |                 |           |                  |             |
| Yes                       | 56,6      | Z** -0,485       | 0,63            | 73,6      | Z** -2,280       | <b>0,02</b> |
| No                        | 51,5      |                  |                 | 49,9      |                  |             |
| Desired/Planned Pregnancy |           |                  |                 |           |                  |             |
| Yes                       | 48,0      | Z** -2,910       | <b>&lt;0,01</b> | 49,1      | Z** -2,109       | <b>0,03</b> |
| No                        | 70,6      |                  |                 | 65,4      |                  |             |
| Preferred delivery mode   |           |                  |                 |           |                  |             |
| Vaginal                   | 54,8      | Z** -0,765       | 0,44            | 59,8      | Z** -2,092       | <b>0,04</b> |
| Caesarean                 | 50,2      |                  |                 | 47,2      |                  |             |

\* Kruskal Wallis Test. \*\* Mann Whitney U Test. Statistically significant,  $P < 0.05$ . †In Turkish Liras (1 U.S. dollarequalsapproximately 5.5 Turkish Liras). W-DEQ: The Wijma Delivery Expectancy/Experience Questionnaire. NUPDQ: The Revised Prenatal Distress Questionnaire

ranging from 0 to 26 with a mean of 7.88 (SD = 4.66) respectively. Therefore, comparisons were made using non-parametric tests. Among the 103 women in our study, the WDEQ-A and NUPDQ scores were moderately and positively correlated with a Spearman correlation co-efficient of 0.56 and 0.57, in nulliparous and multiparous respectively ( $P < 0.001$ ) [Table 4].

Association between the patients' sociodemographic variables with W-DEQ and NUPDQ scores were examined separately [Table 5]. The women with planned/desired pregnancy had lower W-DEQ and NUPDQ scores ( $P < 0.01$  and  $P = 0.03$ ). Women who smoke and who prefer vaginal delivery had higher NUPDQ scores ( $P = 0.02$  and  $P = 0.04$ ). No statistically

significant relationships were found between women's age, educational level, family income, gestational age and partner support with W-DEQ and NUPDQ scores.

## DISCUSSION

In this study, the level of childbirth fear and prenatal anxiety were investigated among third trimester pregnant women. We found that fear of childbirth and prenatal anxiety were positively and moderately correlated with a Spearman correlation coefficient of 0.58. Another finding of the study was that the multiparous women had more fear of childbirth than the nulliparous women although the difference was not statistically significant. Similarly, statistically insignificantly higher NUPDQ

scores were recorded in the multiparous women in comparison to the nulliparous ones. Lastly, the desire for current pregnancy was found to be associated with a fear of childbirth. In other words, women who planned the pregnancy had less fear of childbirth than the women with unplanned/undesired pregnancy.

We analyzed the fear of childbirth and prenatal anxiety using reliable and valid methods previously defined by Wijma *et al.* and Yali and Lobel.<sup>[2,28]</sup> According to existing norms, W-DEQ score  $\geq 85$  indicates a clinically significant fear of childbirth, influencing the woman's well-being.<sup>[29]</sup> In this current study, clinically significant severe fear of childbirth was identified in 2.0% in nulliparous women and 5.7% in multiparous women. This level is lower than the previously published studies' reports.<sup>[23,32,33]</sup> But our scores are consistent with the data of nulliparous and multiparous women from Finland which was reported as 2.5% and 4.5%, respectively.<sup>[34]</sup> Okumus and Sahin reported no significant differences in fear of childbirth between nulliparous and multiparous women in a study from the same country with the current study.<sup>[30]</sup> The influence of childbirth expectations and possible delivery obscurities affect women psychology. While childbirth can be a worrisome situation for all women, the perception of this situation may differ among nulliparous and multiparous women. In our study, multiparous women experienced fear of childbirth more often than nulliparous women. Although the difference of W-DEQ scores was statistically insignificant, the prevalence of clinically severe fear of childbirth was 2.85-fold higher among multiparous than nulliparous women. Differences in fear level between nulliparous and multiparous women have been addressed in different studies.<sup>[16,35]</sup> In most of the previous studies, mean W-DEQ scores of nulliparous women were higher, although more parous women reported severe fear of childbirth.<sup>[16,28]</sup> This is not a surprising situation because nulliparous women tend to feel more anxiety of an unknown condition, whereas multiparous women might have an extremely traumatic birth experience in previous delivery causing intense fear.<sup>[15,20,29]</sup> Previous studies have shown a strong association between past delivery experiences and fear of childbirth in subsequent pregnancies.<sup>[15,20]</sup>

The mean scores for the prenatal distress in our study were 7.58 (SD 4.09) in nulliparous women and 8.17 (SD 5.16) in multiparous women. Lobel *et al.* reported a mean score of 14.8 (SD 7.6). Gennaro *et al.* reported a mean score of 15.05 (standard error = 1.13), and Yali and Lobel reported a mean prenatal distress score of 14.9 (SD 7.2) for their study population.<sup>[2,36-38]</sup> Our prenatal distress scores were lower than the other

studies' scores. One possible justification for this situation may be that our study population involved only low-risk women due to our inclusion criteria. Differently, the studies mentioned above included both high and low-risk women. Nulliparous women in our study had lower distress scores than multiparous women had. This finding was parallel with W-DEQ scores of our study, suggesting that low prenatal stress was associated with low fear of childbirth. Prenatal distress score and W-DEQ scores were found to be moderately correlated in both nulliparous group and multiparous group in the present study. Størksen *et al.* noticed that the presence of anxiety or depression was positively associated with the prevalence of fear of childbirth.<sup>[15]</sup> However, the review of Rondung *et al.* reported that fear of childbirth is generally positively associated neither with anxiety nor with depression suggesting that fear of childbirth is a distinct syndrome.<sup>[16]</sup> It is hard to make a strict conclusion because perception and expression of fear and anxiety may vary in different study groups depending on numerous factors, such as social, cultural, ethical, sociodemographic, or even religious beliefs.

In the literature, most of the studies emphasize PDQ total scores rather than individual items. However, Yali and Lobel reported that preterm delivery, physical symptoms of pregnancy, and pain during labor and delivery were commonly seen reasons for distress in their study.<sup>[25]</sup> In our study, analysis of the items of NUPDQ showed that women were most concerned about "pain during labor and delivery," "unpleasant physical symptoms of pregnancy," "tiredness and low energy during pregnancy" and "anxiety about labor and delivery." Similar to our results, Yüksel *et al.* reported that Turkish women were most distressed and concerned about premature delivery, having an unhealthy baby, labor and delivery, feeling tired and having low energy during pregnancy.<sup>[39]</sup>

Increased prevalence of fear of childbirth was reported in the literature among pregnant women who were characterized by lower educational level, unemployment, and depression.<sup>[17,34,40-42]</sup> In our study sample, we found that the women with planned/desired pregnancy had lower fear of childbirth. Women's age, educational level, family income, unemployment, smoking, the desired mode of delivery, gestational age and partner support were not found to affect the level of childbirth fear. Cultural differences may be a reason for the differences among the studies. Regarding the NUPDQ scores, we found that prenatal distress differed according to the smoking status of the women and the desired mode of delivery. The smokers and the vaginal delivery preferring women recorded more prenatal distress. Women's age, educational level, family income, gestational age, and

partner support were not associated with NUPDQ scores. Unlikely, Yüksel *et al.* reported that prenatal distress was related to education level, gestational age, partner support, and health-related problems.<sup>[39]</sup>

The use of reliable and valid instruments, namely W-DEQ and NUPDQ, was among the strengths of our study. These are widely used tools to determine the fear of childbirth and prenatal distress.<sup>[26,43]</sup> The study was conducted in a university hospital which is a third stage health center with a large catchment area. In the study, we searched for the association of various parameters, and the study was prospectively designed eliminating the recall bias. All the participants were in the third trimester of their pregnancies, making the study population more homogenous. Besides these strengths, the present research had several limitations. Firstly, this was a cross-sectional study with assessments done at a period without any follow-up. Additionally, women were not screened after birth for their delivery experiences. Secondly, this research was conducted in a single city in western Turkey with a relatively small sample size. Because of cultural and traditional diversity among different geographical regions of Turkey, fear of childbirth and prenatal distress might not be generalized to the whole country.

Fears of childbirth and prenatal distress have become important issues in obstetrics. In the present study, we demonstrated the relation between the prenatal distress and fear of childbirth and associated factors. To identify the vulnerable women, we should care about the psychosocial correlates of the patients and make systematic assessments. It is important to remember that not only physical health but also psychological health will contribute to the whole well-being of the mother and the baby during pregnancy. Future studies focusing on the application of structured assessment techniques as well as effective programs to improve the stress coping abilities of pregnant women are needed.

## CONCLUSION

This study investigated the relationship between fear of childbirth, prenatal distress levels, and associated factors. The results revealed that fear of childbirth and prenatal distress were moderately and positively correlated with each other. The severe fear of childbirth was shown to be more common in multiparous women compared to nulliparous women. Our findings suggest that pregnant women who have prenatal distress and fear of childbirth can be identified easily by simple questionnaires during antenatal visits and this can help to create a better pregnancy period physically, emotionally and socially for the pregnant women.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for her clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity. However, complete anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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