

Prenatal distress level and its predictors according to the gestational age in pregnant women

Prenatal distress level in pregnant women

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Abstract

Aim: The aim of the present study was to determine the level and predictors of prenatal distress in pregnant women according to gestational age.

Material and Methods: This cross-sectional study was conducted in eight Family Health Centers (FHCs) in Kırklareli in Northwestern Turkey. The study included 179 pregnant women at $\geq 12^{\text{th}}$ week of gestation, who presented to the FHCs.

Results: The frequency of prenatal distress among the participants was 21.2% (between 12th-27th weeks: 16.5%, between 28th-41st weeks: 26.8%). It was found that level of education, age of the spouse, current pregnancy being unplanned, and social support levels were associated with the level of prenatal distress in $\geq 12^{\text{th}}$ week or between 12-27 weeks or between 28-41 weeks ($p < 0.05$). In addition, perceived income level, abortion, and the number of pregnancies were associated with the level of prenatal distress in ≥ 12 weeks; the age of women, perceived income levels, previous abortion experience, and the number of pregnancies were associated with the level of prenatal distress in between 12-27 weeks; the age of women, education level of a spouse, and previous delivery experience were associated with prenatal distress levels in between 28-41 weeks ($p < 0.05$).

Discussion: The level of prenatal distress according to the gestational age, the education level of the woman, the age of her spouse, unplanned pregnancies, and social support levels were predictors. In the 12-27 weeks and 28-41 weeks, the age of women was found to be a determining factor in prenatal stress levels in pregnant women. Pregnant women should be screened by healthcare professionals in terms of prenatal distress when they visit FHCs, and interventions to activate their social support mechanisms should be planned.

Keywords

Prenatal distress; Gestational age; Pregnancy week; Pregnant women; Social support

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Introduction

Prenatal distress is described as depression, anxiety and stress symptoms, which can negatively affect women in the postpartum period. The fear of the unknown and the physical, social, psychological and hormonal changes during pregnancy cause many changes in women that lead to prenatal distress called stress, anxiety and depression [1-3]. If not treated, prenatal distress affects not only the mother, but also the health of the fetus, infant and child [3,4]. A positive association was reported between anxiety and stress levels and medical risk and past or present pregnancy complications during pregnancy [5]. It has been demonstrated that pregnancy loss, unplanned or unwanted pregnancy, and a history of mental illness resulting in miscarriage or stillbirth, affect prenatal stress levels [3,6]. It is already known that pregnant women experience stress and anxiety in the event of unhealthy or disabled babies [7]. Previous studies have also shown that prenatal distress increases the risk of developing a wide range of negative consequences in children, such as emotional problems, attention deficit, hyperactivity disorder, and neurodevelopmental or neurocognitive dysfunction [8]. Also, prenatal distress is more common in pregnancy and in the early stages of motherhood, which can affect the mother-baby relations and cause bonding problems [9].

In the literature, the frequency of prenatal distress (stress, anxiety and depression) ranges between 11.9% and 55.6% [2,10,11]. This frequency, which varies by gestational age or trimester, is reported to be higher in late periods of pregnancy [12]. The frequency of prenatal distress during pregnancy is also associated with many demographic factors, along with the obstetric background of women [13]. Among the predictors of prenatal distress levels in pregnant women are demographic factors such as young age, low education level, and low income level [2,14,15]. On the other hand, several studies conducted on the issue have revealed a negative relation between anxiety, stress and depression levels and variables such as the level of social support given by the family and spouse/partner, self-esteem, mastery, uncertainty/unhappiness, and a history of violence or adverse events in life [3,5,15].

Distress during pregnancy, which effects sustain in the postpartum period, adversely affects not only the pregnant woman but also her family and remains to be a significant public health problem [16]. The Turkish Statistical Institute reported that the total fertility rate in Kırklareli was lower than the average rate of the entire Turkey in 2017. In this semi-urban city, no current studies were detected in the literature in which the current levels of prenatal stress of pregnant women were investigated; and also, the prenatal distress levels according to pregnancy week are not known. The present study aimed to determine the prenatal stress levels of women who were at the 12th gestational week and the following period, and to detect the predictors of the prenatal distress levels in women according to the gestational weeks.

Material and Methods

Setting and Sample

This cross-sectional study was conducted in eight Family

Healthcare Centers (FHCs) in Kırklareli, located in the semi-urban region in Northwestern Turkey, between June 2018 and November 2018. According to the Turkish Statistical Institute, the number of births in the city center of Kırklareli was 1035 in 2017. The minimum sample size of the study was calculated as 140 ($N = 1035$, $p = 0.12$, $\alpha = 0.05$ and $d = 0.05$) in the Epi Info 7.2 program [10]. Considering possible data losses, the minimum sampling size was increased by 10%, and 154 pregnant women were targeted as the sampling. A total of 179 pregnant women who were at the 12th gestational week and the following period between the dates of the study, who had no health problems in the fetus or infant, with no known medical, obstetric or psychiatric problems, with cognitive competence to answer questions in the questionnaires, and who volunteered to participate, were included in the study. The study was approved by the Ethics Committee of the Institute of Health Sciences Kırklareli University.

Data Collection

The study data were collected using the Personal Information Form, the Tilburg Pregnancy Distress Scale (TPDS), and the Multidimensional Scale of Perceived Social Support (MSPSS). The purpose and scope of the study were explained to the pregnant women admitting to the FHCs in Kırklareli for antenatal follow-ups, vaccine follow-ups, or due to any disease. When the women agreed to participate in the study, they signed an informed consent statement. The women who agreed to participate in the study in the antepartum period and who were at the 12th gestational week and the following period according to their statements were included in the study. Interviews lasted approximately 20-25 minutes and were conducted in a room allocated to interviews in the FHCs, and the forms were filled in by the interviewer or by the interviewee. Each of the women presented to the FHC was interviewed just once, when they were first contacted.

Personal Information Form: The study data were collected using the Personal Information Form developed by the researchers based on the literature. This form contains items questioning the participants' socio-demographic characteristics such as woman's age, education level, marital status, family type, employment status, perceived income level, spouse's age, spouse's education level, and spouse's employment status. There were also questions on obstetric characteristics such as previous deliveries, abortions, current pregnancy being planned, and the gestational week. The perceived income level variable was questioned as "How do you find your monthly income level?" The responses were recorded as "bad, moderate or good", and the women were asked to mark one of the options according to their own decisions. In this study, previous deliveries refer to having previously delivered vaginal or cesarean section except for the current pregnancy. The abortion variable refers to spontaneous or induced abortions.

Tilburg Pregnancy Distress Scale: The scale was developed by Pop et al. to determine the level of pregnancy distress (stress, anxiety, depression). The validity and reliability study of the Turkish version of the scale was conducted by Çapık and Pasinlioglu [1]. It can be used in pregnant women with a gestational age of ≥ 12 weeks. The scale has two sub-scales

as Negative Affect and Partner Involvement. The scores that may be received from the scale vary between 0 and 48, and the higher the score, the higher the level of distress experienced during pregnancy. Çapık and Pasinlioglu reported the total Cronbach's alpha coefficient of the scale as 0.83. Given the cut-off point of the scale, a score of ≥ 28.0 indicates that a pregnant woman is at risk for distress [1]. The evaluations in this study were based on the total score; Cronbach's alpha coefficient was found to be 0.90.

Multidimensional Scale of Perceived Social Support: The scale was developed by Zimet et al. to subjectively measure whether the perceived support received from three sources (family, friends, and special person) was adequate. The validity and reliability study of the Turkish version was conducted by Eker and Arkar [17]. The scores that may be received vary between 12.0 and 84.0. The higher the score, the higher the level of the perceived support. Cronbach's alpha coefficient for the sub-dimensions of the scale was reported to be higher than 0.77 [17]. In this study, the evaluations were made over the total score, and the Cronbach's alpha coefficient of the scale was found to be 0.97.

Data Analysis

To analyze the study data, descriptive statistics, numbers (n), percentages (%), mean and standard deviation (SD) were used. Reliability analysis was performed for the reliability of the scales, and the results were evaluated with Cronbach's alpha coefficient. Whether the data had a normal distribution was tested with the Shapiro-Wilk test. In the study, the Mann Whitney-U test and Kruskal Wallis test were used. In literature [5, 6, 13, 16, 18] associated with prenatal distress level, and in the univariate analysis, variables with $p < 0.10$ were included in the model, and Multivariate Linear Regression Analysis was performed. The explanatory value of the models was evaluated with the Adjusted R-square (Adj. R²). P-values < 0.05 were considered statistically significant. The analysis was performed using the Statistical Package for the Social Sciences, version 22.0 (SPSS Inc., Chicago, IL, USA).

Results

In Table 1, the distress levels of the participants according to their descriptive characteristics are presented. The mean age of the participants was 29.01 ± 5.68 (min: 17, max: 42) years. The frequency of distress among the participants was 21.2%. This frequency was 16.5% between 12-27 weeks and 26.8% between 28-41 weeks of gestation (Figure 1).

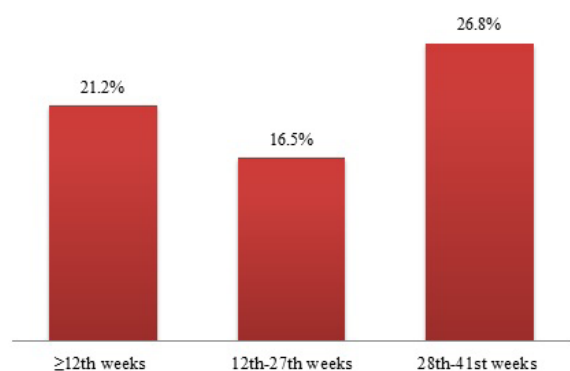


Figure 1. Prenatal distress frequency according to gestational age

In Table 2, the mean scores of the TPDS and MSPSS Scales of all groups by gestational weeks are given. The mean prenatal distress level in the pregnant women was determined to be 17.96 ± 9.70 (min: 3, max: 39), and the mean social support level was 71.11 ± 10.98 (min: 42, max: 84). The mean TPDS score was found to be higher in between 28-41 weeks (20.41 ± 9.82) compared to 12-27 weeks (15.88 ± 9.14). The mean MSPSS score was found to be lower in between 28-41 weeks (68.73 ± 11.89) compared to 12-27 weeks (73.12 ± 9.76).

Table 3 demonstrates multivariate linear regression analysis of distress levels according to the gestational age of the participants was demonstrated. In models created for the 12th pregnancy week and the following period, between 12-27 gestational weeks and between 28-41 weeks of gestation, the difference in the level of prenatal distress was 62.8%, 69.5% and 69.1%, respectively ($p < 0.001$).

At the 12th week of pregnancy and the following period, a negative association was found between the level of prenatal distress and the education level of the pregnant woman ($\beta = -2.640$, 95% CI: -5.168, -0.111), perception of poor or moderate-income ($\beta = -3.427$, 95% CI: -6.383, -0.470), age of her spouse ($\beta = -5.369$, 95% CI: -7.945, -2.793) and social support levels ($\beta = -0.447$, 95% CI: -0.533, -0.361), and a positive association with the number of pregnancies had two or less ($\beta = 4.104$, 95% CI: 0.115, 8.092) and the unplanned pregnancy ($\beta = 4.320$, 95% CI: 1.222, 7.419) (Table 3).

In between 12-27 weeks, it was found that the age of the women ($\beta = -0.609$, 95% CI: -0.862, -0.355), educational level ($\beta = -3.211$, 95% CI: -5.704, -0.718), perceived income level ($\beta = -4.570$, 95% CI: -7.901, -1.239), spouse's age ($\beta = -2.851$, 95% CI: -5.503, -0.198), and social support levels ($\beta = -0.258$, 95% CI: -0.375, -0.141) and prenatal stress level were negatively associated, and previous abortion ($\beta = 5.434$, 95% CI: 1.238, 9.630), the two or fewer previous pregnancies ($\beta = 6.389$, 95% CI: 1.627, 11.151), current pregnancy being unplanned ($\beta = 4.585$, 95% CI: 0.631, 8.540) and prenatal stress levels were positively associated (Table 3).

In between 28-41 weeks, it was found that the age of the pregnant women ($\beta = -0.412$, 95% CI: -0.757, -0.067), educational level ($\beta = -3.105$, 95% CI: -5.894, -0.316), spouse's age ($\beta = -9.090$, 95% CI: -13.257, -4.923), spouse's educational level ($\beta = -5.437$, 95% CI: -8.653, -2.220) and social support level ($\beta = -0.398$, 95% CI: -0.510, -0.286) and prenatal distress levels were negatively related; and previous childbirth ($\beta = 9.034$, 95% CI: 4.202, 13.866) and current pregnancy being unplanned ($\beta = 5.021$, 95% CI: 0.575, 9.467) were positively related with prenatal distress (Table 3).

Discussion

In the present study, carried out in the semi-urban region in Northwestern Turkey, one out of every five participating pregnant women at the 12th week of pregnancy and the following period was determined to suffer from prenatal distress (stress, anxiety, depression). In the literature, the frequency of prenatal distress was 55.6% in Indonesia and 11.9% in women with a gestational age of ≥ 12 th weeks in Turkey and ranged between 37.5% and 54.1% in women with gestational age of 16-36 weeks in Iceland [2, 10, 11]. In addition, in our study,

Table 1. Distress levels of the participants according to their descriptive characteristics

| Variables | ≥12 th weeks (n=179) | | p-value | 12 th -27 th weeks (n=97) | | p-value | 28 th -41 st weeks (n=82) | | p-value |
|-----------------------------------|------------------------------------|---------------|---------|--|---------------|---------|--|---------------|---------|
| | n (%) | Mean (SD) | | n (%) | Mean (SD) | | n (%) | Mean (SD) | |
| Age | | | | | | | | | |
| < 35 | 143 (79.9) | 19.24 (10.02) | 0.002 | 81 (83.5) | 17.02 (9.31) | 0.007 | 62 (75.6) | 22.12 (10.23) | 0.014 |
| ≥ 35 | 36 (20.1) | 12.89 (6.23) | | 16 (16.5) | 10.12 (5.50) | | 20 (24.4) | 15.10 (5.99) | |
| Education | | | | | | | | | |
| Primary school or lower | 41 (22.9) | 24.24 (10.02) | < 0.001 | 16 (16.5) | 22.12 (10.30) | 0.008 | 25 (30.5) | 25.60 (9.79) | 0.004 |
| Secondary or higher | 138 (77.1) | 16.09 (8.82) | | 81 (83.5) | 14.65 (8.43) | | 57 (69.5) | 18.14 (9.01) | |
| Employment status | | | | | | | | | |
| No | 115 (64.2) | 17.76 (8.54) | 0.990 | 59 (60.8) | 15.93 (8.30) | 0.692 | 56 (68.3) | 19.67 (8.42) | 0.363 |
| Yes | 64 (35.8) | 18.33 (11.57) | | 38 (39.2) | 15.81 (10.43) | | 26 (31.7) | 22.00 (12.36) | |
| Perceived income level | | | | | | | | | |
| Poor or Moderate | 155 (86.6) | 19.40 (9.50) | < 0.001 | 79 (81.4) | 17.44 (9.18) | < 0.001 | 76 (92.7) | 21.43 (9.46) | < 0.001 |
| Good | 24 (13.4) | 8.67 (4.49) | | 18 (18.6) | 9.06 (4.98) | | 6 (7.3) | 7.50 (2.51) | |
| Family type | | | | | | | | | |
| Nuclear | 162 (90.5) | 17.82 (9.77) | 0.532 | 85 (87.6) | 15.04 (8.98) | 0.020 | 77 (93.9) | 20.88 (9.74) | 0.086 |
| Extended | 17 (9.5) | 19.29 (9.24) | | 12 (12.4) | 21.83 (8.37) | | 5 (6.1) | 13.20 (9.09) | |
| Spouse's age | | | | | | | | | |
| < 35 | 111 (62.0) | 19.96 (8.79) | < 0.001 | 71 (73.2) | 18.42 (9.12) | < 0.001 | 40 (48.8) | 22.70 (7.50) | 0.027 |
| ≥ 35 | 68 (38.0) | 14.69 (10.29) | | 26 (26.8) | 8.96 (4.45) | | 42 (51.2) | 18.23 (11.28) | |
| Spouse's education | | | | | | | | | |
| Secondary or lower | 61 (34.1) | 23.30 (9.69) | < 0.001 | 30 (30.9) | 18.73 (9.54) | 0.043 | 31 (37.8) | 27.70 (7.68) | < 0.001 |
| Graduate or higher | 118 (65.9) | 15.20 (8.52) | | 67 (69.1) | 14.61 (8.73) | | 51 (62.2) | 15.98 (8.24) | |
| Previous deliveries | | | | | | | | | |
| Nulliparous | 71 (39.7) | 16.72 (9.23) | 0.141 | 37 (38.1) | 14.24 (8.29) | 0.181 | 27 (32.9) | 17.96 (8.78) | 0.115 |
| Vaginal or Caesarean | 108 (60.3) | 18.78 (9.96) | | 60 (61.9) | 16.90 (9.55) | | 55 (67.1) | 21.61 (10.16) | |
| Abortions | | | | | | | | | |
| No | 143 (79.9) | 16.34 (9.45) | < 0.001 | 75 (77.3) | 13.08 (7.40) | < 0.001 | 68 (82.9) | 19.92 (10.19) | 0.305 |
| Yes | 36 (20.1) | 24.42 (7.92) | | 22 (22.7) | 25.45 (8.06) | | 14 (17.1) | 22.78 (7.67) | |
| The number of pregnancies | | | | | | | | | |
| ≤ 2 | 153 (85.5) | 16.50 (9.17) | < 0.001 | 84 (86.6) | 13.95 (7.87) | < 0.001 | 69 (84.1) | 19.61 (9.72) | 0.112 |
| > 2 | 26 (14.5) | 26.54 (8.37) | | 13 (13.4) | 28.39 (6.74) | | 13 (15.9) | 24.69 (9.66) | |
| Current pregnancy planning | | | | | | | | | |
| Planned | 152 (84.9) | 16.39 (9.03) | < 0.001 | 87 (89.7) | 14.56 (8.34) | < 0.001 | 65 (79.3) | 18.83 (9.37) | 0.007 |
| Unplanned | 27 (15.1) | 26.81 (8.71) | | 10 (10.3) | 27.40 (7.87) | | 17 (20.7) | 26.47 (9.38) | |

Table 2. Distribution of mean scores of participants obtained on scales

| Scales | ≥12 th weeks (n=179) | | 12 th -27 th weeks (n=97) | | 28 th -41 st weeks (n=82) | |
|--------|------------------------------------|-----------|--|-----------|--|-----------|
| | Mean± SD | Min.-Max. | Mean± SD | Min.-Max. | Mean± SD | Min.-Max. |
| TPDS | 17.96 ± 9.70 | 3-39 | 15.88 ± 9.14 | 3-38 | 20.41 ± 9.82 | 4-39 |
| MSPSS | 71.11 ± 10.98 | 42-84 | 73.12 ± 9.76 | 42-84 | 68.73 ± 11.89 | 48-84 |

MSPSS: Multidimensional Scale of Perceived Social Support. TPDS: Tilburg Pregnancy Distress Scale

similar to the literature [19, 20], the levels of prenatal distress were higher in participants with a gestational age of 28-41 weeks than that in the participants with a gestational age of 12-27 weeks. It was reported that prenatal distress experienced during pregnancy was mostly due to changes in women in the second and third trimesters and that mothers of advanced ages can adapt to these changes better [2]. These findings, which were consistent with the literature, were associated with the fact that the majority of the participants were in a young age group and had a fear of birth.

It was demonstrated that younger pregnant women were 36% more likely to suffer depression than older pregnant women in

Brazil [16]. In a study conducted in the USA, anxiety levels were found to be higher in younger pregnant women [21]. In a study conducted in Indonesia, young age was reported as the most dominant factor affecting prenatal distress in primigravidae [2]. According to our results, which were consistent with those in the literature, prenatal distress levels increased both in the pregnant women with a gestational age of 12-27 weeks, and in those with a gestational of 28-41 weeks as their age decreased [14, 19, 22].

In the literature, it was stated that there was an inverse association between the education level and perinatal distress levels, that low education level poses the risk for distress, and

Table 3. Multivariate linear regression analysis of distress levels according to the gestational age of the participants

| Variables | ≥12 th weeks ¹ | | p-value | 12 th -27 th weeks ² | | p-value | 28 th -41 st weeks ³ | | p-value |
|--|--------------------------------------|------------------|---------|---|------------------|---------|---|-------------------|---------|
| | β | (95% CI) | | β | (95% CI) | | β | (95% CI) | |
| Age (years) | -0.126 | (-0.375, 0.122) | 0.317 | -0.609 | (-0.862, -0.355) | <0.001 | -0.412 | (-0.757, -0.067) | 0.020 |
| Education level (primary school or lower) | -2.640 | (-5.168, -0.111) | 0.041 | -3.211 | (-5.704, -0.718) | 0.012 | -3.105 | (-5.894, -0.316) | 0.029 |
| Perceived income level (poor & moderate) | -3.427 | (-6.383, -0.470) | 0.023 | -4.570 | (-7.901, -1.239) | 0.008 | -3.156 | (-8.200, 1.887) | 0.216 |
| Family type (nuclear) | | | | 3.817 | (-0.029, 7.662) | 0.052 | -3.680 | (-9.009, 1.648) | 0.173 |
| Spouse's age (<35 years) | -5.369 | (-7.945, -2.793) | <0.001 | -2.851 | (-5.503, -0.198) | 0.035 | -9.090 | (-13.257, -4.923) | <0.001 |
| Spouse's education level (secondary school or lower) | -1.730 | (-3.967, 0.507) | 0.129 | 2.081 | (-0.671, 4.833) | 0.136 | -5.437 | (-8.653, -2.220) | 0.001 |
| Previous deliveries (yes) | -0.410 | (-2.647, 1.827) | 0.718 | | | | 9.034 | (4.202, 13.866) | <0.001 |
| Previous abortions (yes) | 2.122 | (-1.413, 5.658) | 0.238 | 5.434 | (1.238, 9.630) | 0.012 | | | |
| The number of pregnancies (≤ 2) | 4.104 | (0.115, 8.092) | 0.044 | 6.389 | (1.627, 11.151) | 0.009 | 0.430 | (-3.806, 4.666) | 0.840 |
| Current pregnancy planning (unplanned) | 4.320 | (1.222, 7.419) | 0.007 | 4.585 | (0.631, 8.540) | 0.024 | 5.021 | (0.575, 9.467) | 0.027 |
| MSPSS | -0.447 | (-0.533, -0.361) | <0.001 | -0.258 | (-0.375, -0.141) | <0.001 | -0.398 | (-0.510, -0.286) | <0.001 |

1 Adj,R2=0.628, F=31.028, p<0.001; 2 Adj,R2=0.695, F=22.876, p<0.001; 3Adj,R2=0.691, F=19.109, p<0.001.
MSPSS: Multidimensional Scale of Perceived Social Support.

that high education level was a factor preventing pregnancy distress [13, 15, 16]. In our study, prenatal distress levels were found to be lower as the education level of the pregnant women at the 12th week of pregnancy and in the following period or at 12-27 weeks and 28-41 weeks increased. According to this result, which was consistent with the results in the literature, it was thought that people with high education level can access more information about pregnancy and birth and can cope with pregnancy distress more effectively.

Choi et al.'s study reported that low education level and unemployment led to low-income level, which increased pregnancy distress [22]. Several other studies conducted on the issue have shown that there is an association between financial problems and levels of prenatal distress, including depression, anxiety, and stress [21, 23]. On the other hand, in studies conducted with pregnant women in Iceland, Indonesia and South Africa, no association was determined between income levels and prenatal distress levels [2, 6, 11]. Our study found that levels of prenatal distress in pregnant women who reported middle and poor income after the 12th gestational week or between the 12th-27th weeks of gestation were higher; it was not associated with the 28th-41st weeks. This result could be explained by the fact that the pregnant women focus on the birth process and baby care in the later weeks of pregnancy, or that those with a low perceived income level develop coping strategies.

While prenatal distress levels are high in those who have had fewer than two pregnancies at 12th week of pregnancy and the following period or between 12-27 gestational weeks; the prenatal distress levels of those who had previous-abortion experience between 12-27 weeks of gestation and those who had previous-birth experience between 28-41 weeks of gestation were high. In studies conducted in the USA, the Netherlands, and India, nulliparous women were reported to have significantly higher prenatal distress levels [18,20,21,]. In the literature, it was shown that fetal loss and previous pregnancy loss are the predictors of distress, and that they increase distress levels [5,6,15]. These results, which might be due to a lack of perceived parental knowledge, low self-efficacy,

complications experienced during previous pregnancies and deliveries, fear of birth, inadequate social support levels and unplanned pregnancy, were consistent with those in the literature [12,14,19].

In our study, it was found that unplanned pregnancies at 12th week of pregnancy and in the following period or at 12-27 weeks and 28-41 weeks increased prenatal distress levels. A systematic review revealed a strong association between an unplanned or unwanted pregnancy, and antenatal depression and anxiety [3]. In a study, antenatal depression in unplanned pregnancies was reported to be significantly greater than that in planned pregnancies [16]. Several studies conducted in different countries yielded results similar to those of the present study, and the authors of those studies showed that unplanned pregnancies in women with increased gestational age increase distress levels [13,21,22].

In the literature, a negative association between the levels of emotional and practical social support received from the mother, mother-in-law, or spouse/partner or family, and the level of prenatal distress was shown [12,15,23]. In our study, prenatal distress levels of the participants increased as their social support levels decreased. In a Canadian study, 12.9% of pregnant women had inadequate social support, and partner tension affected the anxiety level in the pregnant woman [19]. In parallel with this finding, in our study, while the spouse's presence at a younger age increased prenatal distress levels in the participants at 12 weeks of pregnancy and the following period or between 12-27 weeks or between 28-41 weeks, low education level of the spouse increased the prenatal distress levels in the participants with a gestational age of 28-41 weeks. Similar to our finding, in a study conducted in Northern Tanzania, the frequency of antenatal depression was reported to be higher in pregnant women whose spouses were young [23]. In a study conducted in Turkey, no association was determined between the distress level and the spouse's education level [10]. The difference in our results was probably related to the fact that the spouses were knowledgeable and experienced enough in coping with problems likely to arise during pregnancy.

Limitations

Since the study is cross-sectional, the findings require careful interpretation in terms of cause-effect relationships. Due to the fact that the study was conducted with pregnant women who presented to the FHCs, its results can hardly be generalized to the general population. Another limitation is that the evaluation of prenatal distress level was based on self-report data.

Conclusions

In the present study, one out of every five pregnancies suffered from prenatal distress. Prenatal distress was observed in about one out of every five participants with a gestational age of 12-27 weeks and in one out of every four participants with a gestational age of 28-41 weeks. At 12 weeks of pregnancy and the following period, the level of prenatal distress according to the gestational age, the education level of the woman, perceived income level, the age of her spouse, the number of pregnancies, unplanned pregnancy, and social support levels were predictors. Prenatal distress level was higher in the participants during 28-41 weeks of gestation than during 12-27 weeks of gestation. In both pregnancy periods, as the age, educational level, spouse's age, and social support level of women decreased, prenatal stress levels increased in those with unplanned pregnancy. It was also determined that although the perceived income level, the spouse's age, history of abortions and the number of pregnancies were predictors of the prenatal distress level between 12-27 weeks of gestation, the spouse's age and education level, and previous birth experience were the predictors of the prenatal distress level between 28-41 weeks of gestation.

As a result, health professionals working at FHCs should be given an opportunity to screen and evaluate pregnant women for distress during follow-ups. Healthcare professionals should provide training and counseling programs for pregnant women at risk of distress, and educate pregnant women on coping strategies. One of the predictors of prenatal distress is unplanned pregnancies, which should be prevented by improving the quality of family planning services for women of childbearing age. In addition, social support mechanisms for pregnant women should be activated to prevent or reduce prenatal distress, and their spouses should be encouraged to participate in the training and counseling programs to be conducted.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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