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Differentiating Physical and Mental Fatigue in Pregnancy: A Chalder-Based Quantitative Analysis

Elif Ucar, Melih Bestel

Department of Midwifery, Istanbul Esenyurt University, Faculty of Health Sciences, Istanbul, Türkiye

ABSTRACT

Objective: The aim of this study was to compare the levels of physical and mental fatigue during pregnancy and to determine which type of fatigue is dominant. In addition, the relationships between fatigue levels and some demographic and hematological variables were also investigated.

Materials and Methods: In this cross-sectional study, 222 pregnant women admitted to the obstetrics outpatient clinic of a tertiary health institution were included. Physical and mental fatigue levels were assessed with the sub-dimensions of the Chalder Fatigue Questionnaire, and subjective fatigue perception was measured with the Visual Analog Scale (VAS). In addition, participants' clinical data such as age, gravida, parity, hemoglobin, iron and ferritin levels were analysed.

Results: The Chalder physical fatigue subscore was significantly higher than the mental fatigue subscore ($p<0.001$). A significant positive correlation was found between VAS scores and CHALDER total scores ($\rho=0.469$, $p<0.001$). No statistically significant correlation was found between fatigue levels and age, gravida, parity, hemoglobin, iron and ferritin levels ($p>0.05$).

Conclusion: The most prominent type of fatigue in pregnancy is physical fatigue. The level of fatigue may be related to pregnancy-specific physiological and psychosocial stress factors rather than hematological or demographic factors. It is recommended that a holistic and multidisciplinary approach should be adopted in the management of fatigue in pregnancy.

Keywords: Chalder, Fatigue, Mental fatigue, Physical fatigue, Pregnancy, Visual analog scale

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INTRODUCTION

Fatigue during pregnancy is a condition that women frequently experience throughout their pregnancy. This condition is influenced by various physiological, psychological and social factors. In the first trimester of pregnancy, all the attention of the pregnant woman is on herself. Hormonal changes, metabolic increase and physiological loads in the body during pregnancy may increase the feeling of fatigue.[1] Mood changes may also trigger a mother's fatigue during pregnancy. Studies have shown that psychological conditions such as stress, anxiety and depression are frequently observed during pregnancy, and these conditions may increase the feeling of fatigue.[2]

In addition, an increase in body mass and changes in physical activity level during pregnancy are also important factors affecting fatigue. Pregnant women may often have to spend

Address for correspondence: Elif Ucar. Department of Midwifery, Istanbul Esenyurt University, Faculty of Health Sciences, Istanbul, Türkiye
E-mail: eliflyy@hotmail.com **ORCID ID:** 0000-0001-5302-4688

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more energy to perform their daily activities. This may increase physical fatigue and affect the general quality of life.[1] Especially in the prenatal period, restlessness, insomnia and difficulties encountered in daily activities may increase physical fatigue.[3] In addition, it has been emphasised that fatigue experienced during pregnancy may continue in the postpartum period.[4]

Studies show that approximately 20% of pregnant women experience symptoms of depression during pregnancy, and this may increase mental fatigue.[5] In addition, psychological problems experienced during pregnancy lead to mental fatigue by making psychological adaptation of many women difficult.[6] One of the main causes of mental fatigue is inadequate social support. Active participation of spouses or family members in the pregnancy process may positively affect the psychological well-being of the mother. A positive social support network may minimise mental fatigue by reducing the stress levels of pregnant women.[7] However, negative communication and conflicts experienced with the partner during pregnancy may increase anxiety and mental fatigue.[6] In addition, physical changes experienced during pregnancy may also contribute to mental fatigue. Hormonal changes and physical disorders may lead to mood fluctuations and affect the mind-body connection.[8]

In this study, it was aimed to determine the dominant type of fatigue occurring during pregnancy.

MATERIALS AND METHODS

In this retrospective study, 222 pregnant women who applied to the pregnancy outpatient clinic of a 3rd level hospital were included. The study protocol was approved by the Istanbul Esenyurt University Ethics Committee (Approval No: 2025/06, Date: 05.08.2025), and the study was designed in accordance with the Declaration of Helsinki.

Healthy pregnant patients were included in the study. Patients with any muscle disease, using psychological drugs, diagnosed with fibromyalgia before pregnancy, gestational diabetes or any type of diabetes, diagnosed with hypertension or preeclampsia, heart disease, or non-pregnant patients were not included.

Demographic data and blood analyses during pregnancy were recorded, and fatigue levels of the patients were evaluated with the Chalder fatigue scale.

The Chalder fatigue scale is a self-report scale with high psychometric validity developed to assess the fatigue levels of individuals. There are two subcategories in this scale consisting of 11 items in total. Seven questions assess physical fatigue, and four questions assess mental fatigue. Each item is evaluated according to the level of fatigue experienced in the last 2 weeks.[9]

Statistical Analysis

The data obtained in this study were analysed using the Statistical Package for the Social Sciences v.26.0 software. Descriptive statistics for numerical and categorical variables were calculated and presented in tables. Mean±standard deviation (SD), median, minimum and maximum values were calculated for continuous variables. Frequency (*n*) and percentage (%) distributions were given for categorical variables. The assumption of normal distribution was evaluated by Shapiro–Wilk test. When Shapiro–Wilk $p<0.05$, it was accepted that the variable was not normally distributed.

RESULTS

The mean age of 222 women included in the study was 28.12±5.84, and demographic data are given in Table 1.

Only 1 of the pregnant women included in the study used folic acid before pregnancy, and the rest of the patients did not take folic acid, iron supplements or B12 supplements before pregnancy. Biochemical values of the pregnant women are given in Table 2.

Table 1. Distribution of general characteristics of the study

Variable (*n*=222)	Average±SD	Median (Min–Max)
Age	28.12±5.84	27.0 (17.0–43.0)
Gestation week	14.74±8.63	12.0 (4.0–38.0)
Gravida	3.42±2.19	3.0 (1.0–13.0)
Parity	1.98±1.87	2.0 (0.0–9.0)
Abort	0.43±0.97	0.0 (0.0–8.0)

SD: Standard deviation; Min: Minimum; Max: Maximum.

Table 2. Distribution of biochemical characteristics

Variable	Average±SD	Median (Min–Max)
B12 Level	236.22±125.95	212.5 (83.0–1478.0)
Folic acid level	8.99±4.04	8.05 (2.9–20.0)
Hemoglobin	12.36±1.16	12.5 (8.7–15.5)
Hematocrit	36.88±2.98	37.15 (28.4–45.86)
MCV	82.38±7.09	83.4 (38.6–95.1)
Iron	80.04±44.87	78.0 (9.0–405.0)
Iron binding	276.35±96.82	266.0 (19.0–593.0)
Ferritin	25.94±21.48	19.47 (1.0–110.31)

SD: Standard deviation; Min: Minimum; Max: Maximum; MCV: Mean corpuscular volume.

Table 3. Distribution of Chalder and visual analog scale scores

Variable	Average±SD	Median (Min–Max)
Chalder physical fatigue score	8.15±2.43	7.0 (7.0–21.0)
Chalder mental fatigue score	4.01±0.1	4.0 (4.0–5.0)
Chalder total points	12.15±2.44	11.0 (11.0–25.0)
Visual analogue scale	2.14±1.74	1.0 (1.0–8.0)

SD: Standard deviation; Min: Minimum; Max: Maximum.

Fatigue scales of the patients are given in Table 3.

In the study, a strong positive correlation was observed between Chalder fatigue scores and visual analogue scale (VAS) scores. This indicates that the subjective fatigue perceptions of individuals are consistent with the objective fatigue levels measured by the Chalder scale. As the subjectively reported fatigue level VAS increases, the objective fatigue level measured by the Chalder questionnaire also increases. (Spearman correlation coefficient $\rho=0.71$, $p<0.0001$ in the analysis. Since normal distribution assumptions were not met (Shapiro–Wilk test $p<0.05$ for both variables) Spearman test was preferred (Fig. 1).

In the study, a strong and significant positive correlation was found between Chalder physical fatigue subscale and VAS scores. This result shows that the physical fatigue level of the individual during pregnancy is compatible with subjectively perceived general fatigue. (Spearman correlation coefficient $\rho=0.79$, $p<0.0001$ in the analysis).

A statistically significant but weak positive correlation was found between Chalder mental fatigue score and VAS. This result suggests that the general fatigue perception of individuals is associated with physical fatigue rather than mental fatigue. (Spearman correlation coefficient $\rho=0.177$, $p=0.000$ in the analysis).

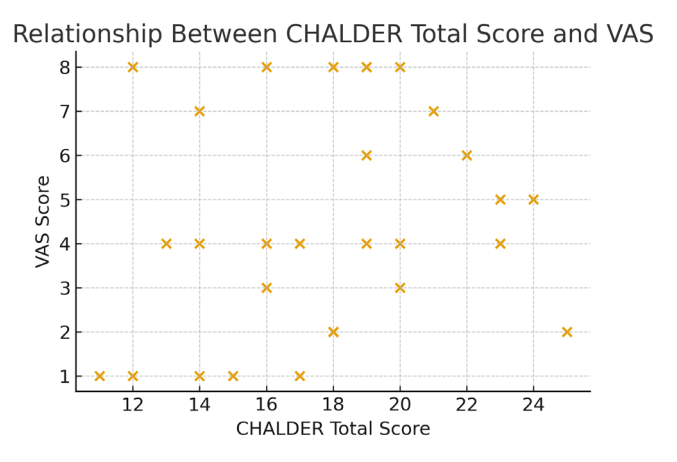

Figure 1. Relationship between Chalder total score and visual analogue scale

Table 4. Comparison of Chalder total fatigue scores according to pregnancy trimester

Gestational trimester	Mean±SD	Median (Min–Max)	*n*
1st Trimester (1–14 weeks)	12.01±2.51	11.0 (11.0–25.0)	126
2nd trimester (15–28 weeks)	12.0±2.18	11.0 (11.0–19.0)	60
3rd trimester (29–42 weeks)	13.26±2.64	13.0 (11.0–18.0)	36

SD: Standard deviation; Min: Minimum; Max: Maximum.

There was a statistically significant difference between Chalder total scores according to gestational week ($p<0.01$). The highest fatigue level was observed in the 3rd trimester (29–42 weeks) group. This finding indicates that physical and mental fatigue increase as the pregnancy progresses (Table 4).

DISCUSSION

In this study, the Chalder Fatigue Scale, which is used to assess physical and mental fatigue in pregnant women, was compared with the VAS, which measures the subjective perception of fatigue, and the relationship between the two different fatigue measurement methods was analysed. The results showed that as the subjective fatigue level reported by VAS increased, the CHALDER total score also increased significantly. This result supports the usefulness of VAS for rapid screening in the clinic, but suggests that comprehensive scales such as CHALDER remain important for multidimensional fatigue assessment.

Pregnancy is a multidimensional and sensitive period in which many physiological and psychological changes occur simultaneously in the female body. Hormonal fluctuations, hematological changes, increased metabolic needs and compulsory changes in lifestyle facilitate the emergence of fatigue. In the first trimester of pregnancy, women's efforts to adapt to the rapid changes in their bodies, combined with symptoms such as a tendency to sleep, nausea, vomiting and general weakness, lead to an increase in both physical and mental fatigue levels. Indeed, in the Generation R study conducted by Bai et al.,[10] it was shown that symptoms such as nausea, vomiting and fatigue observed in early pregnancy had negative effects on quality of life. However, Chou et al.[11] emphasised that fatigue, nausea and vomiting experienced in early pregnancy were closely related with depressive symptoms. This shows that pregnancy fatigue has not only biological but also psychological components. In this study, we did not find a significant relationship between hematological

data and fatigue, which shows that we obtained similar results with the literature.

The findings of this study also provide important clinical insight into the multidimensional structure of antenatal fatigue. The significantly higher physical fatigue scores compared with mental fatigue scores highlight the predominance of somatic burdens during pregnancy, particularly as gestation progresses. Physiological mechanisms such as increased metabolic demands, sleep disturbance, musculoskeletal strain, and weight gain may explain this pattern, suggesting that physical fatigue should be considered a primary focus in antenatal follow-up. Although mental fatigue was also detected, its weaker correlation with subjective fatigue perception indicates that psychological components, while relevant, may be secondary to the physical stressors experienced by pregnant women. These findings support the importance of routine assessment of physical fatigue symptoms during prenatal care, particularly in the third trimester, where fatigue appears to peak.

In this study, the relationship between Chalder total scores and age, gravida, parity, hemoglobin, iron, and ferritin levels was examined, and none of these parameters showed a statistically significant relationship with fatigue score ($p>0.05$). This finding suggests that the main determinants of fatigue in pregnancy are not hematological but rather psychosocial and behavioral factors. However, the weak correlation between the Chalder mental fatigue score and the VAS suggests that the physical component of fatigue may also be important. The fact that fatigue increased in the third trimester of pregnancy in our analysis also supports this. In the study conducted by Zhang et al.[12] in the third trimester, it was shown that pregnancy fatigue was significantly associated with factors including depression, sleep quality, and cognitive dysfunction. Similarly, in a study conducted by Wang et al.[13] using the latent class analysis method in 2022, pregnancy fatigue was classified in different profiles, and it was found that variables including advanced gestational week, adverse obstetric history, and poor sleep quality significantly affected the level of fatigue. In addition, it has been reported that prenatal fatigue is not limited to the gestational period and may also be related with depressive symptoms that may develop in the postpartum period. Fairbrother et al.[14] showed that individuals with high levels of fatigue during pregnancy had a higher risk of developing major depression in the postnatal period. Therefore, pregnancy fatigue should be evaluated not only as a symptom but also as a predictor of postpartum psychological health.

The absence of a significant association between fatigue severity and hematological or demographic parameters underscores an important conceptual shift. Routine laboratory markers frequently used in antenatal practice may not adequately capture the complexity of pregnancy-related fatigue. Instead, psychosocial, behavioral, and physiological contributors are likely to play a greater role in shaping fatigue perception. This interpretation aligns with existing evidence, which emphasizes that sleep quality, emotional state, stress level, and social support exert stronger effects on fatigue than biological indicators alone. Accordingly, integrating psychosocial screening tools into routine antenatal assessments – alongside physical evaluation – may strengthen early identification and management strategies for fatigue in pregnancy.

One of the key strengths of this study is its relatively large sample size of 222 pregnant women, which enhances the statistical reliability and generalizability of the findings. In addition, the study simultaneously evaluated both physical and mental components of fatigue, allowing for a more comprehensive understanding of the multidimensional nature of fatigue during pregnancy. Another methodological strength lies in the combined use of the Chalder Fatigue Scale and the VAS, enabling the integration of both objective multidimensional fatigue scoring and subjective fatigue perception. This dual-scale approach strengthens the methodological robustness of the study and provides a more nuanced interpretation of fatigue patterns among pregnant women.

Limitation

Limitations of the study: Although the data of 222 pregnant women in this study are considered sufficient for statistical analyses, studies with larger samples are needed. Since the study had a cross-sectional design, the findings obtained belonged only to a certain period of time, and it was not possible to evaluate the change in fatigue levels during pregnancy over time. Psychosocial variables such as depression, anxiety, social support, sleep quality and stress level, which may affect the level of fatigue during pregnancy, were not systematically evaluated in this study. The effects of these variables on fatigue could not be taken into account. The study was conducted with a group of patients from a single health institution, and the generalisability of the results to different socioeconomic and cultural levels is limited.

CONCLUSION

When evaluating fatigue during pregnancy, it is important to focus not only on hematological or demographic indicators but also on parameters such as psychosocial status, sleep patterns, emotional burden, and level of social support. However, it should not be forgotten that mental fatigue may be accompanied by a physical component, especially in third-trimester pregnancies. Adopting such a holistic approach in clinical practice will both improve maternal health and contribute to the prevention of mental health problems that may develop in the postnatal period.

DECLARATIONS

Ethics Committee Approval: The study protocol was approved by the Istanbul Esenyurt University Ethics Committee (Approval No: 2025/06, Date: 05.08.2025).

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