



The Relationship Between Pregnant Women's Obsession with Healthy Eating and Perceived Stress

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DOI: <https://doi.org/10.56359/gj.v5i2.439>



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ABSTRACT

Introduction: Pregnancy brings physical, psychological, and social changes, emphasizing health and nutrition. While healthy eating is vital, excessive concern can lead to unhealthy obsessions. Elevated stress during pregnancy may influence eating behaviors, making it crucial to explore their relationship.

Objective: This study aimed to investigate the relationship between obsession with healthy eating and perceived stress in pregnant women.

Methods: A cross-sectional study was conducted with 325 pregnant women attending Bartın Maternity and Children's Hospital between September 2023 and February 2024. Data were collected using the Pregnant Descriptive Information Form, Obsessions with Healthy Eating Scale (ORTO-11), and Perceived Stress Scale (PSS). Statistical analyses included descriptive statistics, the Mann-Whitney U test, and Spearman correlation tests.

Results: The participants' mean age was 27.40 ± 4.46 years, with a mean gestational age of 23.70 ± 6.22 weeks and an average weight gain of 6.55 ± 2.60 kg. Of the participants, 60.6% had a BMI of 25 and above. The mean ORTO-11 score was 24.69 ± 2.58 , and the mean PSS score was 34.08 ± 3.05 . There was no significant correlation between ORTO-11 and PSS scores. However, significant differences in perceived stress and ORTO-11 scores were observed concerning night eating, continuous diet programs, and eating habits outside the home.

Conclusion: This study did not find a statistically significant relationship between pregnant women's obsession with healthy eating and their perceived stress levels. However, the findings suggest that maternal eating behaviors and stress may be influenced by factors such as social support and individual coping mechanisms.

Keywords: eating obsession, nutrition in pregnancy, pregnant women, stress

Introduction

Pregnancy is a complex and multifaceted experience that can profoundly affect a woman's physical, emotional, and psychological well-being (Soylu, 2019; Fahey & Shenassa, 2013). An issue that has attracted increasing attention in recent years is the relationship between pregnant women's obsession with healthy eating and their perceived stress levels. The increased emphasis on prenatal nutrition and fetal health has led many pregnant women to focus more on their dietary choices, which can sometimes manifest as an unhealthy preoccupation. In order to be healthy, improve quality of life, and live healthy individuals in society, nutrition during pregnancy should be adequate and balanced (Marsahll et al., 2022)

Excessive adherence to healthy eating behaviors can sometimes evolve into eating disorders, potentially disrupting dietary patterns and hindering the achievement of adequate and balanced nutrition for pregnant women (García et al., 2021). Pregnancy is a process that involves social, psychological, and physical changes which may be a turning point for improvement or onset/relapse of eating disorders. Studies conducted have emphasized that, in addition to classical eating disorders (anorexia nervosa and bulimia nervosa), new types (e.g., orthorexia nervosa) and subclinical disorders are also seen in pregnant women (Barnes & Caltabiano, 2017; Brytek-Matera, 2012; Dukay-Szabó, 2016; Dunn, 2020).

Orthorexia Nervosa (ON) has been briefly defined as an “obsession with healthy eating” (Bratman, 1997). Obsessions of orthorexic individuals may be related to a wide range of issues, such as pesticides in foods, hormonal foods, chemical sweeteners, preservative chemicals, food dyes, and carcinogenic substances in food packaging and product labels. Studies on ON during pregnancy are quite limited. According to the results of the literature review, there is only one study investigating the risk of ON in pregnant women. A descriptive study conducted with 70 women in Turkey investigated pregnant women's obsessions about healthy eating and eating attitudes (İpkirmaz & Saka, 2020). The reasons for the lack of sufficient evidence on ON in pregnancy are the pregnant women's desire to hide this problem, the masking of ON symptoms with some nutritional problems such as anorexia, hyperemesis gravidarum, pica, especially in the first trimester (Öztürk & Ouyaba, 2024), and the fact that eating disorders are not routinely evaluated during prenatal controls.

The challenges faced by pregnant women trying to overcome the physical and emotional changes associated with pregnancy can be significant. These changes can affect their quality of life and overall health, including their cardiovascular system. Pregnant women may also experience increased levels of stress, anxiety, and depression, which can have long-term consequences for both mother and child (Stein et al., 2014). Some women may perceive pregnancy as a time of joy, happiness, excitement, and maturity, or as a time of negative moods such as stress, anxiety, sadness, and anxious waiting. The stress perceived by mothers during pregnancy depends on various factors. These factors can lead to negative pregnancy outcomes that threaten the physical and mental health of the mother and child (Bergh et al., 2020).

Mild and temporary increased stress during pregnancy is normal and helps pregnant women adapt to this important developmental transition (Fitzgerald et al., 2020). The literature suggests that the relationship between obsession with healthy eating and perceived stress in pregnant women is not clear. While some studies have found that focusing on healthy eating may help pregnant women manage their stress levels, others have noted that excessive preoccupation with diet and nutrition may actually exacerbate feelings of anxiety and pressure (García et al., 2021).

Objective

This study aimed to investigate the relationship between obsession with healthy eating and perceived stress in pregnant women.

Method

Study design

This research is a cross-sectional study.

Setting

This study was conducted with pregnant women aged 13 weeks and over who met the inclusion criteria and who applied to Bartın Maternity and Children's Hospital between September 2023 and February 2024.

Population and sample

The population of the study consisted of pregnant women admitted to Bartın Maternity and Children's Hospital. Sampling was performed using the G*Power 3.1.9.7 program, which calculated the sample size to be 325 based on an effect size of 0.18, $\alpha = 0.05$, and power $(1 - \beta) = 0.95$ (Cohen, 1988). The inclusion criteria for the study were pregnant women who provided informed consent, literate participants, and those without high-risk pregnancies. The exclusion criteria included pregnant women who did not volunteer to participate, those who did not provide consent for the study, women with known psychiatric disorders, and pregnant women with hearing or vision impairments.

Data Collection

In order to collect the data in the study, the Pregnant Introductory Information Form, Obsessions with Healthy Eating (Orthorexia) Scale -ORTO-11, and Perceived Stress Scale (PSS) prepared by the researchers were used.

Research instruments

Pregnant Introductory Information Form

It includes questions about the participants' socio-demographic (age, gender, marital status, employment status, etc.) and obstetric (number of pregnancies, gestational week, etc.) characteristics (Fitzgerald et al., 2020; García et al., 2021; Bergh et al., 2020).

Obsession with Healthy Eating (Orthorexia) Scale -ORTO-11

ORTO-15, a scale developed to determine the obsession with healthy eating in individuals, was created by Donini et al. (2004) by developing and modifying the statements in the 10-question Orthorexia short questionnaire prepared by Bratman (1997). In its original form, the ORTO-15 scale was first developed in Italy and is a 15-item self-assessment tool designed to assess the tendency to Orthorexia Nervosa. Each statement is evaluated with a 4-point Likert-type rating. For the use of the scale in Turkish, 11 items were determined by selecting only the items that loaded on factors with a value of 0.50 and above, and it was decided to use it in Turkish as ORTO-11. It was adapted into Turkish by Arusoğlu et al. (2008) and adapted as ORTO-11. Low scores indicate orthorectic tendency. Cronbach Alpha of the scale is 0.62 (Arusoğlu, 2008; Bratman, 1997; Donini et al., 2004).

Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS) was developed by Cohen, Kamarck, and Mermelstein (1983) (Cohen et al., 1983). Eskin et al. translated the long and short forms of the Perceived Stress Scale into Turkish in 2013 and performed its validity and reliability (Eskin et al., 2013). The PSS, which consists of a total of 14 items, is designed to measure the extent to which certain situations in a person's life are perceived as stressful. Participants rate each item on a 5-point Likert-type scale ranging from “Never (0)” to “Very often (4)”. The 7 items with positive statements are reverse scored. Cronbach Alpha of the scale is 0.84.

Data analysis

Data were analyzed using the SPSS 24 Package Program. Descriptive statistical methods (Percentage, Mean, Standard Deviation), t-test, Mann-Whitney U test, and Spearman correlation tests were used to analyze the data. The statistical significance level was accepted as $p < 0.05$.

Result

Sociodemographic of participants

Table 1. Distribution of sociodemographic and obstetric characteristics of pregnant women

| Variables | Category | f (%) |
|---|-------------------------|--------------|
| Education status | Primary School | 8 (2.5) |
| | Middle School | 27 (8.3) |
| | High School | 153 (47.1) |
| | License | 54 (16.6) |
| | Associate degree | 72 (22.2) |
| | Postgraduate | 11 (3.4) |
| Employment status | Working | 109 (33.5) |
| | Not working | 216 (66.5) |
| Income level | Income < expenditure | 5 (1.5) |
| | Income = to expenditure | 236 (72.6) |
| | Income > expenditure | 84 (25.8) |
| Presence of a continuous diet program | Yes | 32 (9.8) |
| | No | 293 (90.2) |
| Vitamin or mineral supplementation status | Yes | 297 (91.4) |
| | No | 28 (8.6) |
| Knowledge about nutrition during pregnancy | Yes | 323 (99.4) |
| | No | 2 (0.4) |
| Where can you find information on nutrition during pregnancy? | Health professionals | 325 (100) |
| Regular physical activity status | Yes | 95 (29.2) |
| | No | 230 (70.8) |
| How many meals a day | 3 meals | 271 (82.4) |
| | 4 meals | 54 (17.6) |
| Meal skipping status | Yes | 32 (9.8) |
| | No | 293 (90.2) |

| | | |
|--|--------------------------------|----------------|
| Status of eating habits outside the home | Yes | 147 (45.2) |
| | No | 176 (54.2) |
| The speed at which you eat | Slow | 18 (5.5) |
| | Middle | 236 (72.6) |
| | Fast | 71 (21.8) |
| Waking up at night and eating something | Yes | 14 (4.3) |
| | No | 311 (95.7) |
| Spousal support status | Good | 325 (100) |
| Parent-sister support status | Good | 325 (100) |
| Status of peer support | Good | 318 (97.8) |
| | Middle | 7 (2.2) |
| Mother-in-law and father-in-law support status | Good | 301 (92.6) |
| | Middle | 17 (5.2) |
| | Bad | 7 (2.2) |
| Body mass index of pregnant women | 18.5 to 24.9 | 128 (39.4) |
| | 25 and above | 197 (60.6) |
| Average Values | Mean \pmSD | Min-Max |
| Age | 27.40 \pm 4.46 | 18-38 |
| Pregnancy week | 23.70 \pm 6.22 | 13-37 |
| Weight gain during pregnancy | 6.55 \pm 2.60 | 1-14 |
| Total number of pregnancies | 1.91 \pm 1.02 | 0-5 |
| Number of living children | 0.85 \pm 0.99 | 0-5 |

Table 1 shows the distribution of socio-demographic and obstetric characteristics of pregnant women. In this study, it was found that 47.1% of the pregnant women were high school graduates, 66.52% did not have a job that brought income, 72.6% had income equal to expenses, 90.2% did not have a continuous diet program, 91.4% received vitamin or mineral supplements, 99.4% had information about nutrition during pregnancy and all of the pregnant women accessed this information through health professionals.

It was found that 70.8% of the participants did not engage in regular physical activity, 95.7% did not wake up at night and eat something, 90.2% did not skip meals, 54.2% did not have the habit of eating outside the home, 72.6% had a moderate eating rate, 82.4% ate three meals and 60.6% had a body mass of 25 and above.

Among the pregnant women in the study, 92.6% expressed mother-in-law-father-in-law support, 97.8% expressed friend support as good, and all of them expressed spouse and mother-father-sister support as good. The mean values of the sociodemographic and obstetric characteristics of the pregnant women were as follows: age 27.40 \pm 4.46, gestational week 23.70 \pm 6.22, weight gained during pregnancy 6.55 \pm 2.60, total number of pregnancies 1.91 \pm 1.02, number of living children 0.85 \pm 0.99.

Score of the instrument

Table 2. Score of the instrument

| Instruments | Mean±SD | Min-Max |
|---------------------|------------|---------|
| ORTO-11 Scale | 24.69±2.58 | 11-33 |
| PSS | 34.08±3.05 | 21-46 |
| PSS4 sub-dimension | 10.65±1.28 | 5-14 |
| PSS10 sub-dimension | 24.44±2.28 | 15-33 |

Table 2 shows the mean scores of pregnant women on the ORTO-11 scale and the AS scale. The mean ORTO-11 total score of the pregnant women was 24.69±2.58 and the scores of the pregnant women ranged between 11-33. Pregnant women scored a total of 34.08±3.05 points on the AS scale, with scores ranging between 21-46.

Correlation between variables

Table 3. Correlation between scales and sub-dimensions

| | ORTO-11 Total | PSS 4 total subscale (stress) | PSS 10 total sub- dimension (self- efficacy) | PSS Total |
|--|------------------|----------------------------------|--|-------------|
| ORTO-11 Total | . | .431 | .051 | .072 |
| PSS 4 total subscale (stress) | .431 | . | .000 | .000 |
| PSS 10 total sub- dimension (self- efficacy) | .051 | .000 | . | .000 |
| PSS Total | .072 | .000 | .000 | . |

*Statistical evaluation was performed by spearman correlation analysis.

Table 3 shows the examination of the relationship between the ORTO-11 and the mean total score of the PSS. There was no statistically significant correlation between the ORTO-11 total scale score and the PSS total scale score ($p>0.05$).

Table 4. Comparison of Eating Characteristics of Pregnant Women with Total Scale Scores

| Features | | n | ORTO-11 Total | PSS Total |
|--|-----|-----|------------------|-----------|
| Waking up from sleep at night and eating something | Yes | 14 | | |
| | No | 311 | | |
| Statistical testing | *U | | 1764.50 | 1215.50 |
| | p | | .224 | .005** |
| Continuous diet program status | Yes | 32 | | |
| | No | 293 | | |
| Statistical testing | **U | | 3215.00 | 4045.00 |
| | p | | .003** | .198 |
| Status of eating habits outside the home | Yes | 147 | | |
| | No | 176 | | |
| Statistical testing | *U | | 9598.50 | 11619.00 |
| | p | | .000*** | .111 |

*Mann Whitney U Test. **p<0.05. ***p< 0.001

Table 4 shows the comparison of the eating characteristics of pregnant women with their total scale scores. A statistically significant difference was found between the status of waking up at night and eating something and the total score of the perceived stress scale. In the further analysis (Mann Whitney U Test) performed to determine from which group this difference originated, it was determined that pregnant women who woke up at night and ate something were higher than pregnant women who woke up at night and did not eat anything. A statistically significant difference was found between the continuous diet program status of pregnant women and ORTO-11 scale total score. In the further analysis (Mann Whitney U Test) performed to determine from which group this difference originated, it was determined that pregnant women who applied diet were higher than pregnant women who did not apply diet. A statistically significant difference was found between pregnant women's eating habits outside the home and ORTO-11 scale total score. In the further analysis (Mann Whitney U Test) performed to determine from which group this difference originated, it was determined that pregnant women with eating habits outside the home were higher than pregnant women without eating habits outside the home.

Discussion

This study was conducted to examine the relationship between healthy eating obsession and perceived stress in pregnant women. The findings obtained in the study were discussed in line with the literature. The mean ORTO-11 score of the pregnant women who participated in the study was 24.69. ORTO-11 total score of 33 and below indicates that the pregnant woman has the risk of orthorexia nervosa. In the literature, there are very few studies investigating orthorexia nervosa in pregnant women. İpkırmaz and Saka (2020) found that the mean ORTO-11 score in pregnant women was 36.27 ± 3.76 (İpkırmaz & Saka, 2020). In a study, the mean ORTO-11 score of nutrition and dietetics students was 37.68, while that of social work students was 37.97 (Demir et al., 2020). This may be due to increased nutritional awareness during pregnancy and more controlled health behaviors of pregnant women. However, more research is needed on why ORTO-11 scores are low in pregnant women. In

another study conducted with nutrition and dietetics students, it was determined as 30.2 ± 4.43 (Gezer & Kabaran, 2013). In the literature, it has been reported that ORTO-11 scores vary between different groups and demographic characteristics. In the study of Arslantaş et al., the mean ORTO-11 score for all participants was reported as 27.34 ± 4.53 , while in the study of Bağcı Bosi et al., this value was found to be 39.87 ± 0.22 (Arslantaş et al., 2017; Bosi et al., 2007). In another study conducted on pregnant women, the mean ORTO-11 score was 29.29 ± 3.77 (Öztürk & Ouyaba, 2024). In addition, in Arusoğlu's study, it was stated that individuals with higher education levels showed lower orthorexic tendencies compared to individuals with other education levels (Arusoğlu, 2008). These findings indicate that demographic and educational levels may affect the risk of orthorexia nervosa and reveal the need to examine the mechanisms underlying the changes seen between different groups. In our study, the fact that our sample group consisted of women with higher education levels may have caused the frequency of orthorexia nervosa to be higher than other women. Although there are studies indicating that education level affects ON tendency (Arusoğlu, 2008; Ulaş et al., 2013), there are also studies indicating that sociodemographic characteristics and ON frequency do not differ significantly (Donini et al., 2004; Ergin, 2015; Ramacciotti et al., 2011).

Negative health behaviors may occur with stress during pregnancy (Atasever & Çelik, 2018) and these behaviors may negatively affect pregnancy outcomes (Herman et al., 2016; Omidvar et al., 2018). In this study, the perceived stress scores of pregnant women were found to be high (Table 2). The high perceived stress scores of pregnant women in our study support the studies of Atasever and Çelik (2018) and Omidvar et al. (2018). These findings suggest that stress is a common problem during pregnancy and this may trigger negative health behaviors. However, no significant relationship was found between perceived stress and ORTO-11. This may be due to the sample characteristics or the limitations of the measurement tools used and suggests that different mechanisms may shape the effect of stress during pregnancy on nutritional behaviors. For example, the fact that pregnant women make more conscious choices for infant health in their feeding behaviors during this period may have limited the detection of the relationship between stress and ORTO-11. Future studies with larger samples and including interventions should examine the relationship between stress and feeding behaviors in depth. This study has the potential to contribute to new strategies for improving health behaviors during pregnancy.

Strength and limitation

This study has several notable strengths that contribute to its academic rigor and practical implications. First, it explores a relatively under-researched area—the relationship between healthy eating obsession and perceived stress in pregnant women—thereby filling a critical gap in the literature. The use of validated and reliable measurement tools, such as the ORTO-11 and Perceived Stress Scale (PSS), ensures the robustness and accuracy of the collected data. Additionally, the study's relatively large sample size ($n=325$) enhances its statistical power and increases the generalizability of the findings to a broader population. By incorporating a diverse range of demographic, socio-economic, and behavioral variables, the study provides a comprehensive understanding of the factors influencing eating behaviors and stress during pregnancy. Finally, the adherence to ethical research standards, including informed consent and approval from the Ethics Committee, strengthens the credibility and integrity of the study.

Despite its contributions, the study also has limitations that warrant consideration. The cross-sectional design restricts the ability to establish causality between healthy eating obsession and perceived stress, limiting the study's capacity to determine temporal or directional relationships. Furthermore, the reliance on self-reported data introduces the potential for response bias, as participants may inaccurately report their behaviors or stress levels. The study was conducted in a single hospital in Turkey, which may limit the findings' applicability to other cultural or geographical contexts, thereby reducing generalizability. Additionally, some unmeasured variables, such as cultural attitudes, psychological resilience, and personality traits, may have influenced the outcomes but were not accounted for in the analysis. Finally, the focus on low-risk pregnancies excludes a critical subgroup of pregnant women, potentially narrowing the scope of the study's implications. These limitations highlight the need for future longitudinal and multicenter studies to build upon the findings presented here.

Implications

Midwives, nurses, and other healthcare providers should assess pregnant women's eating habits, stress levels, and social support systems during routine prenatal visits. Providing personalized interventions can help mitigate the potential negative effects of stress on maternal health. Future studies should explore additional factors such as self-efficacy, social support, and psychological well-being that may mediate the relationship between stress and eating behaviors. Longitudinal research designs and larger, more diverse sample sizes are recommended to enhance the generalizability of the findings.

Conclusion

This study explored the relationship between pregnant women's obsession with healthy eating and their perceived stress levels. Although no statistically significant relationship was found between these two variables, the findings highlight the complexity of maternal health behaviors during pregnancy. The results suggest that factors such as social support, self-efficacy, and coping strategies may mediate the relationship between healthy eating habits and stress. The absence of a direct relationship indicates that stress does not necessarily manifest as an obsession with healthy eating during pregnancy. Therefore, understanding the broader context of pregnant women's psychological and social experiences remains critical in addressing their nutritional behaviors and overall well-being.

Acknowledgement

Presented as an oral presentation at the 10th Hitit Student Congress on May 16-19, 2024 with 296 Bildiri Code. TUBITAK 2209-A Student Research Projects Program supported this study. The authors are grateful to TUBITAK for financial support. We also thank the pregnant women who participated in this study.

Funding

This research is funded by TUBITAK 2209-A Student Research Projects Program supported this study.

Authors' contribution

GA, CC: Study conception, CC: Data collection, GA,CC: Study design, GA: Data analysis, drafting the manuscript, GA: Critical revisions for intellectual content, supervision.

Conflict of interest

The authors have no employment, financial, non-financial, or other competing interests to declare. The researchers stated that there is no conflict of interest related to the implementation and publication of the results of this research. The entire research process, from planning, data collection, analysis, to report preparation, was carried out independently without any influence or pressure from any third party. A commitment to research ethics is upheld throughout the research process, ensuring transparency, accuracy and honesty in reporting results. Respondents' participation was voluntary with informed consent, and their confidentiality and privacy were maintained in accordance with applicable research ethics standards. With this statement, researchers hope that the research results can be trusted and used as a valid reference for the development of science and health practices related to ethnomedicine and reproductive health.

Ethical consideration

Ethics Committee Permission (Protocol no: 2022-SBB-0452) was obtained from Bartın University Social and Human Sciences Ethics Committee for the study. Participants were informed about the study and their verbal and written consent was obtained.

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