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PERCEIVED STRESS AMONG WOMEN IN HEALTHCARE: THE ROLE OF BODY APPRECIATION AND EATING BEHAVIORS

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Abstract. The present study aimed to examine the associations between perceived stress, body appreciation, and eating behaviors among women working in a healthcare setting, a population exposed to substantial psychological strain. *Methods.* A sample of women (N = 204) working in a regional healthcare institution in Lithuania completed a self-administered questionnaire between late 2024 and early 2025. Perceived stress was assessed using the Lithuanian version of the Reeder Stress Inventory (Reeder, Chapman, and Coulson, 1968; Markevičiūtė, 2003), body appreciation was measured using the Lithuanian version of the Body Appreciation Scale-2 (Tylka and Wood-Barcalow, 2015; Baceviciene and Jankauskiene, 2020), and eating behaviors were evaluated using scales reflecting health-risk and health-promoting eating behaviors (Durán et al., 2014; Grabauskas et al., 2015). Descriptive statistics, Pearson's correlation analysis, and multiple linear regression analyses were performed. *Results.* Multiple linear regression analysis revealed that body appreciation was significantly and negatively associated with perceived stress ($\beta = -0.441$, $p < 0.001$), indicating that higher body appreciation was related to lower perceived stress. The professional group was also significantly associated with perceived stress ($\beta = 0.209$, $p = 0.002$), with healthcare professionals reporting higher stress levels than administrative staff. No statistically significant associations were observed between perceived stress and age, education level, marital status, place of residence, body mass index, or eating behaviors. The regression model explained 26.9% of the variance in the perceived stress. *Conclusions.* Psychological factors, particularly body appreciation, play an important role in perceived stress among women in healthcare settings. These findings highlight the importance of addressing psychological well-being and promoting a positive body image in interventions aimed at reducing stress in this population group.

Keywords: perceived stress, body appreciation, eating behaviors, healthcare, women

Introduction

Perceived stress reflects the extent to which individuals experience situations in their lives as unpredictable, uncontrollable, and overwhelming (Cohen et al., 1983), and can also be understood as the perception that environmental demands exceed one's ability to cope (Richardson et al., 2012). It arises from a complex interaction between individual characteristics and environmental factors and plays a significant role in shaping both psychological and physical health outcomes (Eleazu et al., 2025).

Healthcare professionals are particularly exposed to substantial psychological strain owing to the demanding nature of their work and the broader organizational and social contexts in which they operate (De Kock et al., 2021; Johnson et al., 2018; Lin et al., 2025). However, stress in this population should not be viewed solely as a consequence of occupational demands but rather as a broader phenomenon encompassing personal, social, and contextual influences on stress. From this perspective, stress can be understood as a cumulative psychological burden shaped not only by work-related pressures but also by everyday life experiences, individual characteristics and available coping resources. This approach allows for a more comprehensive understanding of stress, acknowledging that multiple domains of life contribute to overall psychological well-being (Lin et al., 2025).

Accumulating evidence suggests that perceived stress is closely linked to health-related behaviors, particularly eating patterns. The relationship between stress and health behaviors is complex and heterogeneous, with studies demonstrating positive, negative, or no association depending on individual and contextual factors (Hill et al., 2022; Inauen et al., 2026). Meta-analytic evidence suggests that the associations between stress and eating behaviors are generally small in magnitude and may vary across populations and behavioral outcomes (Hill et al., 2022). In the context of eating behavior, stress may influence dietary patterns through multiple psychological and situational mechanisms, including emotional processes and contextual factors such as time pressure (Bamberg, Blecher, and Reichenberger, 2026). Recent review-level evidence also suggests that eating behaviors are influenced by a broader range of psychosocial factors, including mood, emotional regulation, food-related emotions, perceived dietary control, social support, and the eating context (Walker-Clarke et al., 2022). These influences may lead to changes in eating behaviors, such as increased snacking, altered food intake, and shifts in food choices. Simultaneously, unhealthy eating patterns are associated with higher levels of stress, anxiety, and depressive symptoms, highlighting a close and potentially bidirectional relationship between eating behaviors and mental health outcomes (Caamaño-Navarrete et al., 2024).

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In addition to lifestyle-related factors, body image has emerged as an important psychological factor associated with perceived stress, particularly among women (Tylka and Wood-Barcalow, 2015). Body appreciation, a positive dimension of body image, reflects acceptance, respect, and favorable attitudes toward one's body (Tylka and Wood-Barcalow, 2015). A growing body of research indicates that positive body image is strongly linked to psychological well-being, including higher self-esteem, greater life satisfaction, and lower depression and anxiety levels (Tylka and Wood-Barcalow, 2015; Linardon et al., 2022; Linardon et al., 2023; Swami et al., 2023). Recent evidence suggests that body appreciation may function as a protective psychological resource associated with better mental health outcomes across diverse populations and cultural contexts (Linardon et al., 2023; Swami et al., 2023). Conversely, body dissatisfaction is associated with maladaptive behaviors, particularly disordered eating, as well as poorer psychological functioning and quality of life (Baceviciene et al., 2020). Furthermore, intervention-based evidence indicates that improvements in positive body image are associated with decreases in body dissatisfaction and internalization of sociocultural appearance ideals, highlighting its role in promoting healthier psychological and behavioral outcomes (Balciuniene et al., 2022). From this perspective, body appreciation may function as a protective psychological resource that enhances resilience and promotes more adaptive responses to stress (Linardon et al., 2022; Linardon et al., 2023). Moreover, body image may play an important role in shaping health-related behaviors, including eating patterns, by influencing how individuals relate to their bodies and respond to internal cues and sociocultural pressures (Baceviciene et al., 2020; Tylka and Wood-Barcalow, 2015).

Although perceived stress, eating behaviors, and body image have been examined in the literature, their interrelationships remain insufficiently understood, particularly among women working in healthcare. Moreover, there is a lack of research exploring these associations in specific cultural contexts, such as Lithuania. In particular, limited research has examined the simultaneous associations between perceived stress, body appreciation, and eating behaviors in women working in healthcare settings. A better understanding of how these factors interact may contribute to the development of more effective health promotion and stress reduction strategies tailored to this population. In particular, identifying the role of psychological factors such as body appreciation may help inform targeted interventions aimed at improving both mental well-being and health-related behaviors.

Therefore, this study aimed to examine the associations between perceived stress, body appreciation, and eating behaviors among women working in healthcare settings. It was hypothesized that perceived stress would be negatively associated with body appreciation and that this association would remain significant after controlling for potential confounders, including sociodemographic characteristics and body mass index. In addition, the association between perceived stress and eating behaviors was further explored.

Methods

Research Design and Ethics Statement

This study employed a quantitative cross-sectional design and a survey-based data collection method. Participation was voluntary, and the participants were informed about the purpose of the study prior to data collection. The survey was anonymous, and the data were used solely for scientific purposes. Formal ethics committee approval was not required for this anonymous, non-interventional, questionnaire-based study. Nevertheless, all procedures followed the ethical principles of the Declaration of Helsinki, and informed consent was obtained from all participants.

Participants and Procedure

The study was conducted among women working in a regional healthcare institution in Lithuania. Data were collected in late 2024 and early 2025 using a self-administered questionnaire. The participants completed the questionnaire voluntarily during working hours. The questionnaire was administered in either paper or electronic form, and no time limit was imposed on completion. All questionnaires were completed anonymously, and only fully completed responses were included in the final analysis of the study. The required sample size was estimated using the Raosoft sample size calculator, assuming a 95% confidence level, 5% margin of error, and 50% response distribution. A minimum sample size of 200 participants was determined.

Measures

Demographic and background characteristics. Participants reported their age, education level, marital status, place of residence, and professional group. Age was recorded in years. The education level was categorized into secondary, college, and university education. Marital status was grouped as single/never married, married/living in a civil partnership, and widowed/divorced. Place of residence was categorized as urban (large city or city) or rural (district or village). The professional groups were categorized into administrative or other healthcare staff (reference group), nurses, and physicians.

Perceived stress was assessed using the Reeder Stress Inventory (Reeder, Chapman, and Coulson, 1968). The Lithuanian version of the scale, adapted by Markevičiūtė (2003), was used in this study. The Reeder Stress Inventory was selected because a validated Lithuanian version of the instrument is available and has demonstrated good psychometric properties in previous studies in Lithuania (Markevičiūtė, 2003). The instrument consists of seven items assessing perceived stress in everyday life (e.g., "My daily activities are very tiring and exhausting"). Responses were rated on a four-point Likert-type scale ranging from 1 (strongly agree) to 4 (strongly disagree). In the original scoring system, higher scores indicated lower levels of perceived stress. However, in the present study, the items were reverse-coded so that higher scores reflected higher levels of perceived stress. The mean score was calculated and used in the analyses, with higher scores indicating greater perceived stress. The internal consistency of the scale was good (Cronbach's $\alpha = 0.869$).

Body appreciation was measured using the Body Appreciation Scale-2 (BAS-2) (Tylka and Wood-Barcalow, 2015). The Lithuanian version of the scale (LT-BAS-2) was used in this study (Baceviciene and Jankauskiene, 2020). The BAS-2 is a 10-item instrument designed to assess positive body image, including favorable opinions about one's body, body acceptance despite perceived imperfections, respect for the body reflected in attentive and health-oriented behaviors, and resistance to societal and media pressure regarding appearance ideals. Responses were rated on a five-point Likert scale ranging from 1 (never) to 5 (always) (e.g., "I respect my body"). Mean scores were calculated for the analysis, with higher scores indicating greater body appreciation. The internal consistency of the scale was excellent (Cronbach's $\alpha = 0.969$).

Eating behaviors were assessed using two composite scales reflecting health-risk eating behaviors and health-promoting eating behaviors.

Health-risk eating behaviors were assessed using a five-item scale derived from the Lithuanian Adult Lifestyle Survey Questionnaire, 2014 (Grabauskas et al., 2015). The scale reflects unhealthy eating habits and eating-related behaviors, such as eating in a hurry, eating while watching television or reading, overeating, snacking on unhealthy foods, and eating late in the evening (e.g., "I snack on foods such as chips, nuts, popcorn, sweets, etc."). Responses were rated on a five-point Likert scale ranging from 1 (never) to 5 (always). Mean scores were calculated for the analysis, with higher scores indicating more frequent engagement in health-risk eating behaviors. The internal consistency of the scale was acceptable (Cronbach's $\alpha = 0.645$).

Health-promoting eating behaviors were assessed using an adapted version of the Food Habits Survey (Durán et al., 2014). The scale has previously been applied in Lithuania and has demonstrated good internal consistency (Balčiūnienė, 2022). Only items relevant to healthy eating practices were included, resulting in a 10-item scale. The scale assesses the frequency of behaviors such as preparing meals at home, eating 3–5 times per day, regularly having breakfast and lunch, eating at consistent times, consuming boiled or stewed food, and choosing fresh vegetables, fruits, berries, whole grains, and lean meat (e.g., "I prepare meals at home"). Responses were rated on a five-point Likert scale ranging from 1 (never) to 5 (always). Mean scores were calculated for the analysis, with higher scores indicating more frequent engagement in the health-promoting eating behaviors. The internal consistency of the scale was good (Cronbach's $\alpha = 0.867$).

The body mass index (BMI) was calculated based on self-reported body weight and height using the World Health Organization (WHO) formula: BMI = weight (kg) / height (m2) (World Health Organization, 2000).

Statistical Analyses

Statistical analyses were performed using IBM SPSS Statistics version 31 (IBM Corp., Armonk, NY, USA). Descriptive statistics were calculated for all the study variables. Continuous variables are presented as mean ± standard deviation and categorical variables as frequencies and percentages. Pearson's correlation analysis was used to examine the association between perceived stress and study variables.

Multiple linear regression analysis was conducted to identify factors associated with perceived stress, with all explanatory variables being entered simultaneously. Sociodemographic characteristics (age, education level, marital status, place of residence), body mass index, and professional group were included as control variables, whereas body appreciation and eating behaviors were examined as explanatory variables of primary interest. Standardized regression coefficients (β), p-values, and variance inflation factor (VIF) values were reported in the results.

The internal consistency of the scales was assessed using Cronbach's α. Statistical significance was set at $p < 0.05$.

Results

The characteristics of the study sample are shown in Table 1. The mean age of the participants was 47.07 years (SD = 11.61), and the mean body mass index was 26.85 kg/m^2 (SD = 5.29).

Regarding educational attainment, 42.6% of the participants had a college education, 35.3% had a university education, and 22.1% had a secondary education. The majority of respondents were married or living with a partner (63.2%), while 23.5% were widowed or divorced, and 13.2% were single. Most participants lived in urban areas (77.9%), and 22.1% resided in rural areas.

In terms of professional group, 51.0% of the respondents were administrative or other healthcare staff, 39.7% were nurses, and 9.3% were physicians.

Regarding lifestyle behaviors, the mean score for health-risk eating behaviors was 2.74 (SD = 0.64), and the mean score for health-promoting eating behaviors was 3.58 (SD = 0.75). The mean body appreciation score was 3.47 (SD = 1.02) and the mean perceived stress score was 2.70 (SD = 0.72).

Table 1. Characteristics of the study sample (N = 204)

Variable		n (%) / Mean ± SD
Sociodemographic characteristics		
Age (years)		47.07 ± 11.61
Education level		
	Secondary education	45 (22.1%)
	College education	87 (42.6%)
	University education	72 (35.3%)
Marital status		
	Single / never married	27 (13.2%)
	Married / civil partnership	129 (63.2%)
	Widowed / divorced	48 (23.5%)
Place of residence		
	Urban	159 (77.9%)
	Rural	45 (22.1%)
Professional group		
	Administrative / other healthcare staff	104 (51.0%)
	Nurses	81 (39.7%)
	Physicians	19 (9.3%)
Physical characteristics		
Body mass index, kg/m^2		26.85 ± 5.29
Eating behaviors		
Health-risk eating behaviors		2.74 ± 0.64
Health-promoting eating behaviors		3.58 ± 0.75
Psychological factors		
Body appreciation		3.47 ± 1.02
Perceived stress		2.70 ± 0.72

Note. Categorical variables are presented as *n (%)*, and continuous variables are presented as *mean ± standard deviation (SD).*

Pearson's correlation analysis revealed several significant associations between perceived stress and the study variables (Table 2). Perceived stress was negatively correlated with body appreciation ($r = -0.41$, $p < 0.001$) and health-promoting eating behaviors ($r = -0.16$, $p < 0.05$), indicating that higher body appreciation and more frequent healthy eating behaviors were associated with lower perceived stress. In contrast, perceived stress showed a positive correlation with health-risk eating behaviors ($r = 0.17$, $p < 0.05$). No significant correlation was observed between perceived stress and body mass index ($r = 0.05$, $p > 0.05$).

Body appreciation was negatively associated with health-risk eating behaviors ($r = -0.18$, $p < 0.05$) and body mass index ($r = -0.28$, $p < 0.001$), whereas a positive correlation was observed between body appreciation and health-promoting eating behaviors ($r = 0.25$, $p < 0.001$). Additionally, health-risk eating behaviors were negatively correlated with health-promoting eating behaviors ($r = -0.26$, $p < 0.001$). No significant association was found between body mass index and eating behavior measures.

Table 2. Correlations between perceived stress and study variables

Variable	1	2	3	4	5
1. Perceived stress	1	-0.41***	0.17*	-0.16*	0.05
2. Body appreciation		1	-0.18*	0.25***	-0.28***
3. Health-risk eating behaviors			1	-0.26***	0.05
4. Health-promoting eating behaviors				1	-0.07
5. Body mass index					1

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Multiple linear regression analysis was conducted to examine the factors associated with perceived stress (Table 3). The overall regression model was statistically significant and explained 26.9% of the variance in perceived stress ($R^2 = 0.269$, $F(9, 194) = 7.947$, $p < 0.001$). Collinearity diagnostics indicated no multicollinearity concerns among the explanatory variables, as the variance inflation factor (VIF) values ranged from 1.037–1.454.

The results indicated that body appreciation was significantly and negatively associated with perceived stress ($\beta = -0.441$, $p < 0.001$), suggesting that women who reported higher body appreciation experienced lower levels of perceived stress.

The professional group was also significantly associated with perceived stress ($\beta = 0.209$, $p = 0.002$). Administrative staff were used as the reference category in the regression model. The positive regression coefficient indicates that employees working in other healthcare professional groups, such as nurses and physicians, tend to report higher perceived stress levels than administrative staff.

No statistically significant associations were observed between perceived stress and age ($\beta = -0.087$, $p = 0.241$), education level ($\beta = 0.042$, $p = 0.459$), marital status ($\beta = -0.012$, $p = 0.868$), or residence ($\beta = -0.001$, $p = 0.982$). Similarly, body mass index ($\beta = -0.123$, $p = 0.069$), health-risk eating behaviors ($\beta = 0.059$, $p = 0.372$), and health-promoting eating behaviors ($\beta = -0.033$, $p = 0.622$) were not significantly associated with perceived stress.

Table 3. Factors associated with perceived stress: multiple linear regression analysis

Explanatory variable	B	β	95% CI for B	p	VIF
Age	-0.005	-0.087	-0.014 to 0.004	0.241	1.454
Education level	0.065	0.042	-0.080 to 0.176	0.459	1.208
Marital status	-0.014	-0.012	-0.182 to 0.154	0.868	1.332
Place of residence	-0.002	-0.001	-0.216 to 0.211	0.982	1.037
Professional group	0.230	0.209	0.087 to 0.372	0.002	1.153
Body mass index	-0.017	-0.123	-0.035 to 0.001	0.069	1.207
Health-risk eating behaviors	0.067	0.059	-0.080 to 0.214	0.372	1.156
Health-promoting eating behaviors	-0.031	-0.033	-0.156 to 0.093	0.622	1.158
Body appreciation	-0.312	-0.441	-0.406 to -0.218	<0.001	1.204
Model summary:	$R = 0.519$, $R^2 = 0.269$, $F(9, 194) = 7.947$, $p < 0.001$				

Note. B – unstandardized regression coefficient; β – standardized regression coefficient; 95% CI – 95% confidence interval for the unstandardized regression coefficient; p – level of significance; and VIF – variance inflation factor.

Discussion

The present study aimed to examine the associations between perceived stress, body appreciation, and eating behaviors among women working in healthcare settings. The findings partially support the initial expectations and highlight the importance of psychological factors, particularly body appreciation, in understanding perceived stress in this population.

Consistent with the study hypotheses, body appreciation was significantly and negatively associated with perceived stress. Women who reported higher levels of body appreciation experienced lower perceived stress. This finding is consistent with previous research indicating that a positive body image is closely linked to better psychological well-being and may function as a protective factor against stress (Linardon et al., 2022; Linardon et al., 2023; Swami et al., 2023). Individuals with higher body appreciation may have more adaptive coping strategies and greater emotional resilience, which could contribute to lower perceived stress (Linardon et al., 2022).

In contrast, eating behaviors were not significantly associated with perceived stress in the regression analysis, although some relationships were observed at the correlational level. This suggests that the association between stress and eating behaviors may be complex and potentially indirect, involving mediating

psychological mechanisms or context-dependent factors that were not captured in this study. Previous research has shown that the relationship between stress and eating behaviors is heterogeneous and may vary depending on individual differences, psychosocial influences, and situational factors (Hill et al., 2022; Inauen et al., 2026). Meta-analytic evidence also suggests that stress-eating associations are generally small in magnitude, which may partly explain why eating behavior variables did not remain statistically significant after adjusting for other factors (Hill et al., 2022). Eating behaviors may also be shaped by broader psychosocial factors, including mood, emotional regulation, perceived dietary control, food-related emotions, social support, and eating context (Walker-Clarke et al., 2022), which may explain why eating behaviors did not remain significant predictors after adjusting for other variables. It is also possible that psychological factors, such as body appreciation, may share explanatory variance with eating behaviors and therefore play a more central role in perceived stress than behavioral patterns alone. Furthermore, eating behaviors may reflect coping responses that are situationally driven and therefore less stable predictors of perceived stress when other variables are considered.

Another important finding was the significant association between professional group and perceived stress, with healthcare professionals reporting higher stress levels than administrative staff. This is consistent with previous research highlighting the demanding nature of healthcare work and its impact on psychological well-being (De Kock et al., 2021; Johnson et al., 2018). This difference may be explained by the higher emotional demands, workload, and responsibility associated with clinical roles, as well as frequent exposure to patient-related stressors. However, the results also support the conceptual approach adopted in this study, emphasizing that perceived stress should be understood as a broader phenomenon shaped by both occupational and nonoccupational factors.

No significant associations were observed between perceived stress and sociodemographic variables or body mass index (BMI). However, body mass index demonstrated a marginal association with perceived stress, indicating a possible trend that did not reach statistical significance and may warrant further investigation in future studies. These findings suggest that perceived stress in this sample may be more strongly influenced by internal psychological factors rather than external demographic or physical characteristics, as stress reflects subjective environmental demand appraisals (Cohen et al., 1983). Recent evidence suggests that body appreciation is consistently associated with better psychological well-being, life satisfaction, self-esteem, and lower levels of mental health problems across diverse populations and cultural contexts, even after adjusting for negative body image (Linardon et al., 2022; Linardon et al., 2023; Swami et al., 2023). These findings further support the importance of psychological resources in shaping stress experiences among female healthcare workers. Cultural and contextual factors may also influence body appreciation and stress perception and should be considered when interpreting the findings in the Lithuanian healthcare context. Nevertheless, additional occupational and psychosocial factors, such as workload, shift work, sleep quality, emotional demands, coping strategies, and organizational support, may also contribute to perceived stress among healthcare workers and could partly account for the remaining unexplained variance in the regression model (Lin et al., 2025).

Overall, the findings highlight the relevance of body appreciation as a key psychological factor associated with perceived stress. Interventions aimed at enhancing positive body image and psychological well-being may contribute to more effective stress management strategies. Although eating behaviors were not significantly associated with perceived stress in the final model, their potential role should not be overlooked, as they may be involved in more complex or indirect pathways.

Limitations, strengths, and implications for future research. This study had several limitations. First, the cross-sectional design does not allow causal inferences regarding the relationships between perceived stress, body appreciation, and eating behaviors. Second, the use of self-reported measures may have introduced response bias, including social desirability or subjective interpretations of questions. Third, the study sample consisted of women working in a single regional healthcare institution in Lithuania, which may limit the generalizability of the findings. The study also did not include detailed occupational characteristics, such as workload, shift work, or years of professional experience, which may influence perceived stress among health care professionals. Additionally, the use of a single-method approach may have limited the ability to capture the more nuanced aspects of the studied relationships. Finally, although body mass index demonstrated a marginal association with perceived stress, the sample size may have limited the statistical power to detect weaker relationships.

Despite these limitations, this study had several strengths. This study is among the few that have examined the interplay between perceived stress, body appreciation, and eating behaviors among women working in healthcare settings in Lithuania. Another strength of this study is the use of validated measurement instruments

and multivariate statistical analysis, allowing for a more comprehensive assessment of the relationships among variables.

The findings have important practical implications. In particular, they emphasized the relevance of integrating psychological well-being components, such as body appreciation, into health promotion and stress reduction programs for healthcare professionals. Strengthening positive body image may be an effective approach to improving overall well-being. Previous research suggests that workplace interventions, including mindfulness-based approaches, meditation, yoga, coaching, peer support, organizational strategies, and physical relaxation methods such as stretching and progressive muscle relaxation, may help reduce perceived stress and improve well-being among healthcare professionals (Cohen et al., 2023; Ong et al., 2024; Zhang et al., 2021). However, the long-term effectiveness of mindfulness-based interventions may vary between studies (Ong et al., 2024). From a broader perspective, addressing psychological resources in healthcare professionals may contribute not only to individual health outcomes but also to the quality of care provided in healthcare settings.

Future research should employ longitudinal designs to better understand the direction of the observed associations. Further studies are needed to explore the potential mechanisms underlying the relationships between perceived stress, body appreciation, and eating behaviors, as well as to examine these associations in more diverse populations and settings. Future research could also include male healthcare professionals and examine potential gender differences in perceived stress, body appreciation, and eating behaviors.

Conclusions

1. Body appreciation was the strongest factor associated with perceived stress and may represent an important psychological resource for women working in healthcare settings.
2. Perceived stress was not significantly associated with health-risk or health-promoting eating behaviors.
3. Body mass index showed a marginal association with perceived stress.
4. Healthcare professionals reported higher perceived stress than did administrative staff.

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