THE QUALITY OF LIFE WITH OBESITY (QUOLO) QUESTIONNAIRE – A VALIDATION STUDY

Kwestionariusz jakości życia pacjentów leczonych z powodu otyłości „QUOLO" – badanie walidacyjne

Anna Maria Różańska-Walędziak[1], Maciej Walędziak[2,3], Adrianna Majewska[4], Anna Mierzejewska[1]

1. *Department of Human Physiology and Pathophysiology, Cardinal Stefan Wyszyński University, Poland*
2. *Military Institute of Medicine – National Research Institute, Departments of General, Oncological, Metabolic and Thoracic Surgery, Poland*
3. *Faculty of Medicine, University of Warsaw, Poland*
4. *Faculty of Medicine, Cardinal Stefan Wyszyński University, Poland*

Anna Maria Różańska-Walędziak – 0000-0002-5764-3811
Maciej Walędziak – 0000-0003-4311-9995
Adrianna Majewska – 0000-0001-5391-8462
Anna Mierzejewska – 0000-0002-0282-4041

Abstract

Introduction and objective: As the prevalence of obesity continues to rise, understanding its impact on quality of life has become increasingly important for healthcare providers and researchers. The aim of the study was to validate the Quality of Life with Obesity (QUOLO) questionnaire, a tool designed to assess quality of life among individuals with obesity. **Material and methods:** The QUOLO questionnaire is a comprehensive health and wellness survey with a total of 67 questions covering demographics, health conditions, psychological well-being, and social factors. This cross-sectional study included 117 participants. **Results:** The study revealed several unexpected patterns, with underweight individuals reporting slightly higher quality-of-life scores and obese individuals showing lower general health scores but similar overall quality of life. Higher BMI was associated with lower levels of shame and reduced fear of social contact. Male participants reported higher levels of psychological distress across multiple domains compared with females, which diverges from typical population patterns. **Conclusions:** The absence of strong associations between BMI and quality of life in this sample suggests that body weight may not be as deterministic of subjective well-being as commonly assumed.

Streszczenie

Wprowadzenie i cel: W obliczu światowej epidemii otyłości zrozumienie jej wpływu na jakość życia staje się coraz ważniejsze dla pracowników ochrony zdrowia oraz badaczy zajmujących się leczeniem pacjentów z nadmierną masą ciała. Celem badania była walidacja kwestionariusza Quality of Life with Obesity (QUOLO) służącego do oceny jakości życia osób z otyłością. **Materiał i metody:** Kwestionariusz jakości życia pacjentów leczonych z powodu otyłości (QUOLO) to kompleksowa ankieta zawierająca 67 pytań dotyczących demografii, stanu zdrowia, dobrostanu psychicznego i czynników społecznych. Badanie ma charakter przekrojowy, objęło 117 uczestników. **Wyniki:** W badaniu zaobserwowano kilka nieoczywistych zależności. Pacjenci z niedowagą uzyskali wyższe wyniki świadczące o jakości życia i ogólnym stanie zdrowia niż pacjenci z nadmierną masą ciała. Osoby z wyższym wskaźnikiem masy ciała zgłaszały niższy poziom poczucia wstydu i mniejsze obawy przed kontaktami społecznymi. Mężczyźni wykazywali wyższy poziom stresu psychicznego w wielu obszarach w porównaniu z kobietami, co odbiega od typowych wzorców populacyjnych. **Wnioski:** Brak silnych zależności między wskaźnikiem masy ciała a jakością życia w badanej grupie sugeruje, że masa ciała może nie być tak istotnym czynnikiem determinującym subiektywny dobrostan, jak powszechnie się przypuszcza.

Keywords: quality of life; obesity; validation; self-worth; life satisfaction

Słowa kluczowe: jakość życia; otyłość; walidacja; poczucie własnej wartości; satysfakcja z życia

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Corresponding author:
Maciej Walędziak
Military Institute of Medicine – National Research Institute, Departments of General, Oncological, Metabolic and Thoracic Surgery, Warsaw
e-mail: maciej.waledziak@gmail.com

Introduction

Obesity is recognized as one of the major public health challenges of the 21st century, affecting millions of individuals worldwide. It is not merely a physiological condition characterized by excessive body fat but a complex state with far-reaching implications for mental, emotional, and social well-being [1]. As the prevalence of obesity continues to rise, understanding its impact on quality of life (QoL) has become increasingly vital for healthcare providers, researchers, and policymakers [2, 3].

The experience of living with obesity often leads to a range of psychological challenges, including depression, anxiety, and low self-esteem [4, 5]. These mental health issues frequently stem from societal stigma and discrimination, which can result in social withdrawal and diminished life satisfaction. Many individuals with obesity struggle with self-acceptance in the context of prevailing beauty standards and pressure to conform to idealized body images. This relentless pressure may exacerbate feelings of inadequacy and unworthiness, which are detrimental to mental health [6]. Consequently, the negative psychological outcomes associated with obesity require thorough assessment and targeted intervention.

The social aspects of living with obesity are equally significant [7]. Social interactions may become increasingly complex as individuals navigate a world that often marginalizes larger bodies. Experiences of bullying, social exclusion, and difficulties in forming intimate relationships are commonly reported [8]. Such social barriers can hinder personal development and contribute to diminished QoL [9]. Understanding the intricate relationship between obesity and social dynamics is critical for fostering inclusive environments that support individuals in their journey towards improved health and self-acceptance [10].

In light of these multifaceted challenges, the need for reliable measurement tools is paramount. The Quality of Life with Obesity (QUOLO) questionnaire has been designed to capture the unique experiences of individuals living with obesity, encompassing psychological, social, and self-acceptance dimensions. By providing a comprehensive assessment of QoL specific to this population, QUOLO aims to identify areas where individuals may need the most support and intervention. Psychometric validation of the questionnaire is essential to ensure its utility and reliability, enabling clinicians and researchers to gauge the impact of obesity on QoL effectively.

This manuscript presents a validation study of the QUOLO questionnaire, detailing its development, psychometric evaluation, and relevance for understanding the complex relationship between obesity, mental health, social functioning, and self-acceptance. Establishing QUOLO as a robust tool for assessment may enhance the ability of healthcare providers to address the holistic needs of individuals with obesity, contributing to improved health outcomes and quality of life. This research aims to contribute to a deeper understanding of how obesity influences daily life experiences and to promote resources that empower individuals on their path to self-acceptance and well-being.

Material and methods

The Quality of Life with Obesity (QUOLO) is an original questionnaire created by the authors of the study. It is a comprehensive health and quality-of-life instrument developed to evaluate the quality of life of patients before and after bariatric surgery. The survey is focused on understanding how weight and health conditions impact various aspects of life, from psychological well-being to social functioning and healthcare experiences.

Before presenting the survey to the target group, a short validation study was conducted among medical students training to become physicians. It was distributed online to third and fourthyear students of the medical faculty, yielding 117 completed responses (response rate: 85%). Respondents were also asked to provide any remarks regarding the construction of the survey that that could ameliorate its quality. The survey was available online for two months for participants who received the link (March and April 2025). Approval from the Bioethics Committee of the Military Institute of Warsaw was obtained (code KB/12/24).

The QUOLO questionnaire is a comprehensive health and wellness survey with a total of 67 questions covering demographics, health conditions, psychological well-being, and social factors.

QUOLO questions include:

- Demographics (gender, age, education, employment, living situation)
- Health status (weight, height, medical conditions, medications)
- Quality-of-life measures (general health, physical fitness, self-worth)
- Psychological symptoms (sadness, mood swings, anxiety, concentration issues)
- Social impact (work difficulties, social interactions, body image)
- Physical limitations (daily activities, mobility, exercise)
- Physical symptoms (pain, breathing issues, sleep problems)
- Healthcare experiences (treatment by medical staff)

Statistical analysis

Statistical analysis was performed with Julius.ai.

All statistical analyses were conducted using Python (version 3.x) with the pandas, numpy, and scipy libraries. The dataset consisted of survey responses from 117 participants who completed a comprehensive health and quality-of-life questionnaire.

Continuous variables, including body mass index (BMI), were calculated from self-reported height and weight. BMI categories were defined according to WHO standards: underweight (<18.5 kg/m^2), normal weight (18.5–24.9 kg/m^2), overweight (25.0–29.9 kg/m^2), and obese (≥30.0 kg/m^2). Quality-of-life and mental-health measures were assessed on 5-point Likert scales and converted to numeric values for analysis.

Descriptive statistics, including means, standard deviations, and frequencies, were calculated for all variables.

Pearson correlation coefficients were computed to examine linear relationships between BMI and mental-health measures. Correlation strengths were interpreted according to Cohen's conventions: small (r = 0.10), medium (r = 0.30), and large (r = 0.50) effect sizes. All statistical tests were performed with a significance level of p = 0.05.

Results

The BMI data show a healthy distribution, with a mean of 22.6 (±4.0), which falls within the normal range (range: 16.4–36.6). The majority of participants (n = 78) were in the normal BMI category. The distribution of BMI in the study group is presented in Table 1.

The analysis revealed no significant correlations between BMI and any of the quality-of-life measures. Correlation results are presented in Table 2.

ANOVA analyses showed no significant differences between BMI categories for any quality-of-life measure. However, the data indicate some counterintuitive patterns, with underweight individuals reporting slightly higher quality-of-life scores and obese individuals showing lower general health scores but similar overall quality of life. The relationship between QoL scores and BMI is presented in Figure 1.

The analysis also revealed several patterns between BMI and mental-health symptoms. Interestingly, BMI showed no significant correlations with general quality-of-life measures such as overall life satisfaction, health, physical fitness, or self-worth.

Positive correlations suggest that higher BMI is associated with more frequent mental-health symptoms, while the negative correlations for shame and social contact anxiety are counterintuitive, indicating that individuals with higher BMI reported lower levels of shame. Feelings of shame showed the strongest relationship with BMI, with higher BMI associated with lower shame scores. Mood swings (r = 0.190) and concentration problems (r = 0.185) showed moderate positive correlations with BMI. The need to cry (r = 0.161) also demonstrated a positive relationship with BMI. Correlations between BMI and mental-health measures are presented in Figure 2.

Table 1. Distribution of BMI

BMI	*n*
Obesity	6
Overweight	27
Normal	78
Underweight	11

Table 2. Correlation with BMI results

Overall quality of life	r = 0.021, p = 0.827
General health	r = −0.050, p = 0.594
Physical fitness	r = −0.046, p = 0.622
Self-worth	r = −0.074, p = 0.434

The analysis of the results reveals that individuals with higher BMI reported less shame (r = −0.293, p = 0.001) – a moderate negative correlation, and less fear of social contact (r = −0.206, p = 0.027) – a weak but significant negative correlation (Fig. 3).

The sample included 85 female (72.6%) and 32 male (27.4%) respondents. The data acquired in the survey show that males reported higher levels of psychological distress across multiple domains compared with females, which contrasts with typical population patterns. This may be specific to this sample or the particular measures being validated.

Overall quality-of-life scores were very similar between genders, with no significant differences. The analysis revealed several statistically significant differences in psychological symptoms. Males reported significantly higher scores for the need to cry (p <0.001), mood swings (p <0.001), and concentration problems (p = 0.026). Male participants also presented higher levels of health anxiety (p = 0.001), general anxiety (p = 0.001), and shame (p = 0.043) than female participants.

Discussion

This cross-sectional study of 117 Polish adults examined the relationships between body mass index (BMI) and various dimensions of quality of life and mental health. The findings reveal a complex pattern of associations that challenges conventional assumptions about weight and psychological well-being. Contrary to expectations, no significant correlations were observed between BMI and core quality-of-life measures, including overall quality of life, general health perceptions, physical fitness, or self-worth (all r <0.15, p >0.05).

The mental-health analysis yielded particularly noteworthy results, with the most prominent finding being a negative correlation between BMI and feelings of shame (r = −0.293), suggesting that individuals with higher BMI reported lower levels of shame. This counterintuitive pattern may reflect cultural factors, adaptive coping mechanisms, or body-acceptance attitudes within this population. Modest positive correlations were observed between BMI and mood swings (r = 0.190), concentration problems (r = 0.185), and emotional lability (r = 0.161), suggesting some association between higher weight and specific psychological symptoms.

This Polish survey results challenge common stereotypes about weight and psychological well-being. Rather than showing the expected positive correlation between BMI and psychological distress, the data suggest that individuals with higher BMI in this sample reported lower levels of shame and less social anxiety. This may indicate resilience, acceptance, or cultural factors specific to this population. The most striking finding is that higher BMI is significantly associated with lower levels of shame and social anxiety, which is counterintuitive to common assumptions. The finding related to shame is particularly interesting, as it contradicts common assumptions about weight and self-perception.

In this Polish validation sample, body weight is not a major determinant of perceived quality of life, which contrasts

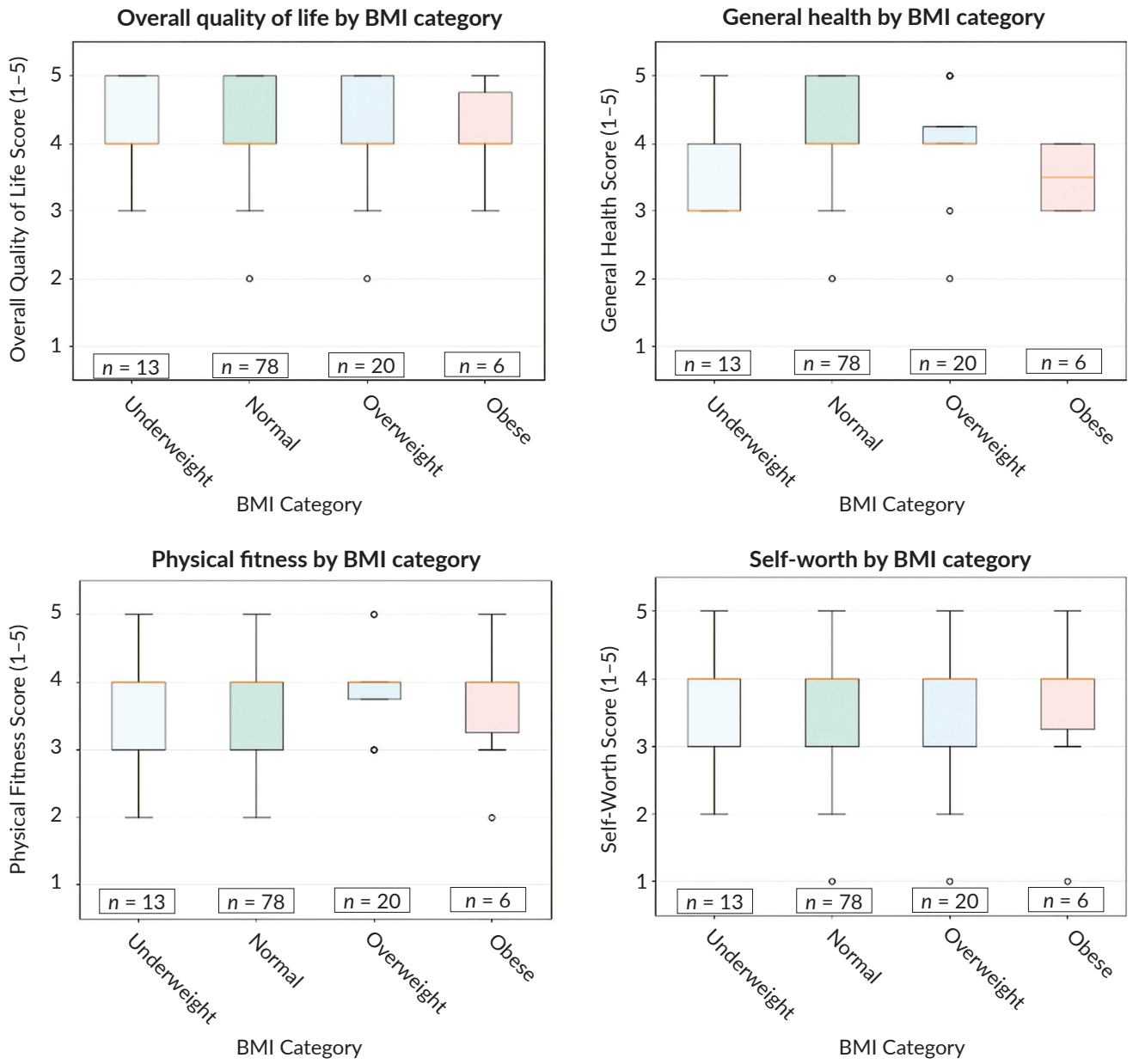

Figure 1. Quality-of-life scores by BMI category

with some population studies but may reflect characteristics specific to this validation cohort. The analysis suggests that while there are some relationships between BMI and mental-health symptoms, they are complex and not uniformly aligned with expected patterns. The negative correlation with shame might indicate resilience or different cultural attitudes toward body weight within this population.

The study also showed unexpected results regarding psychological distress and heath anxiety, with higher levels presented by male participants. This contrasts with typical population assumptions that females are more emotionally affected by life stressors.

Participants in the validation survey were asked for comments on the structure and questions included. The feedback provided a comprehensive critique of a survey focused on health and lifestyle. Respondents expressed a need for options indicating uncertainty about their health status, as well as clearer differentiation in physical-activity levels and tolerances, highlighting that perceived effort can vary significantly across activities. Suggestions were also made to incorporate combinations of work and study, alongside an option of "not applicable" for items related to hospitalization or work status. Some of the participants emphasized the importance of adding questions about headaches, comorbid conditions related to obesity, and the quality of medical care, particularly regarding treatment attitudes and support for patients. Following these suggestions, the structure of the survey will be revised to improve its quality and create a more nuanced and inclusive approach in survey design to capture a diverse range of experiences and perspectives.

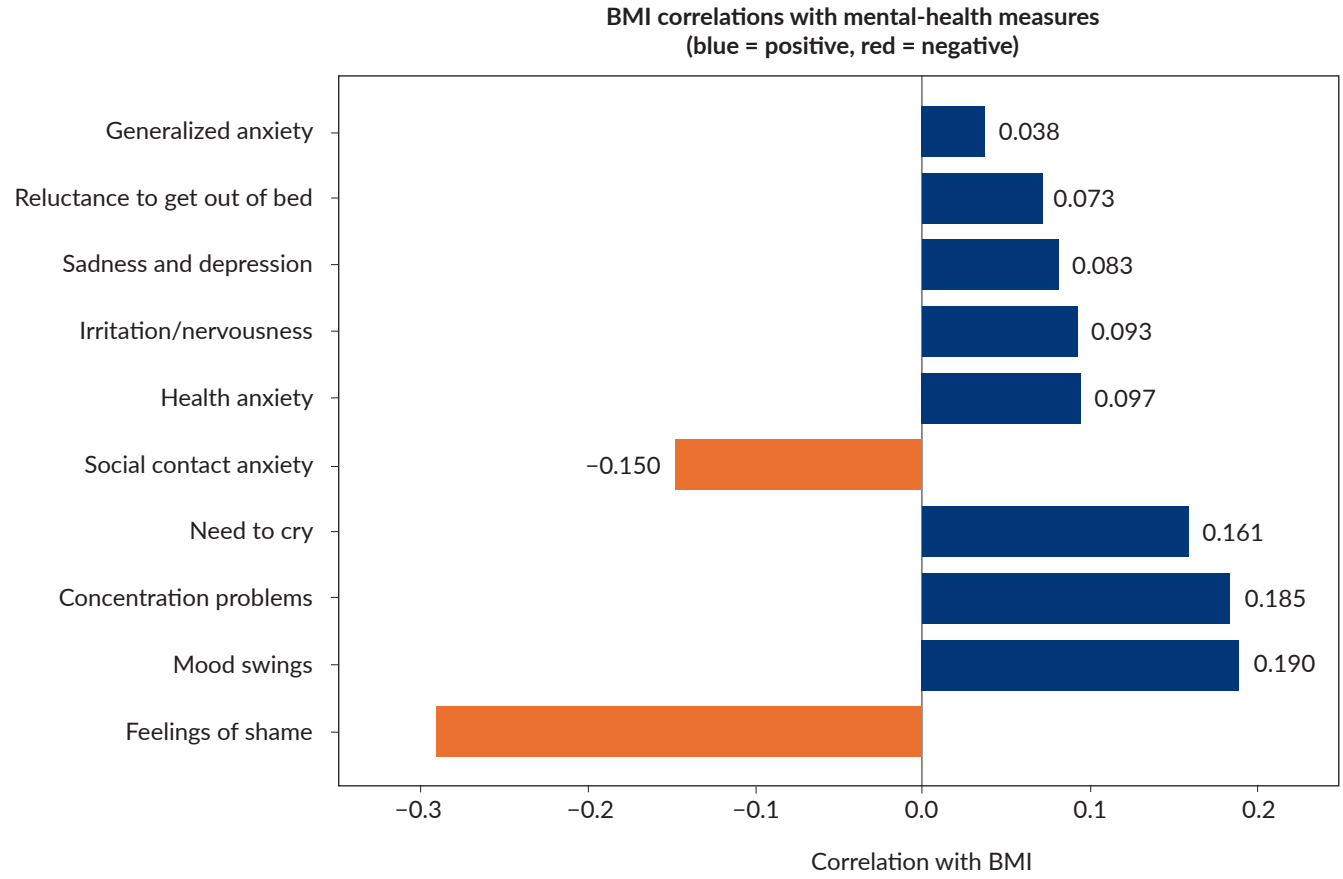

Figure 2. BMI correlations with mental-health measures

These findings represent a notable departure from established literature on BMI and psychological well-being. Previous research has consistently demonstrated positive associations between higher BMI and increased psychological distress, with meta-analyses reporting significant correlations between obesity and depression (r = 0.15–0.25) and anxiety disorders [11, 12]. However, this study of Polish adults revealed markedly different patterns, particularly the unexpected negative correlation between BMI and feelings of shame (r = −0.293), which contradicts findings from Western populations where weight stigma and shame typically increase with BMI [13, 14].

The absence of significant correlations between BMI and quality-of-life measures in this sample contrasts sharply with large-scale studies such as the Nurses' Health Study and the Health Professionals Follow-up Study, which demonstrated clear inverse relationships between BMI and health-related quality-of-life scores. Similarly, the modest correlations with mood symptoms (r = 0.19 for mood swings) are considerably weaker than those reported in longitudinal cohort studies, where obesity has been associated with a 25–55% increased risk of developing depression [12].

These discrepancies may reflect important cultural and contextual factors [15–17]. Research in Eastern European populations has suggested different body-image ideals and weight-related attitudes compared with Western societies [17]. Additionally, the Polish cultural context may include protective factors such as stronger family support systems or different social norms regarding body acceptance that buffer against weight-related psychological distress [18]. The negative shame correlation in particular warrants consideration of cultural adaptation theories, which propose that individuals in certain cultural contexts develop resilience mechanisms against weight stigma [19, 20].

Alternatively, these findings may reflect methodological differences, including the cross-sectional design, reliance on self-reported measures, or sample characteristics that differ from previous studies. The relatively small sample size (n = 117) may also limit the ability to detect weaker associations identified in larger epidemiological studies.

Limitations of the study

The number of participants was small, and the sample consisted primarily of young adults, the majority of whom did not have obesity. Most participants (78/115) had normal BMI, which may limit the power to detect differences. Therefore, conclusions from this survey validation study cannot be extrapolated to clinical populations with obesity.

Conclusions

The analysis included 117 participants and shows that BMI alone is not a strong predictor of overall quality-of-

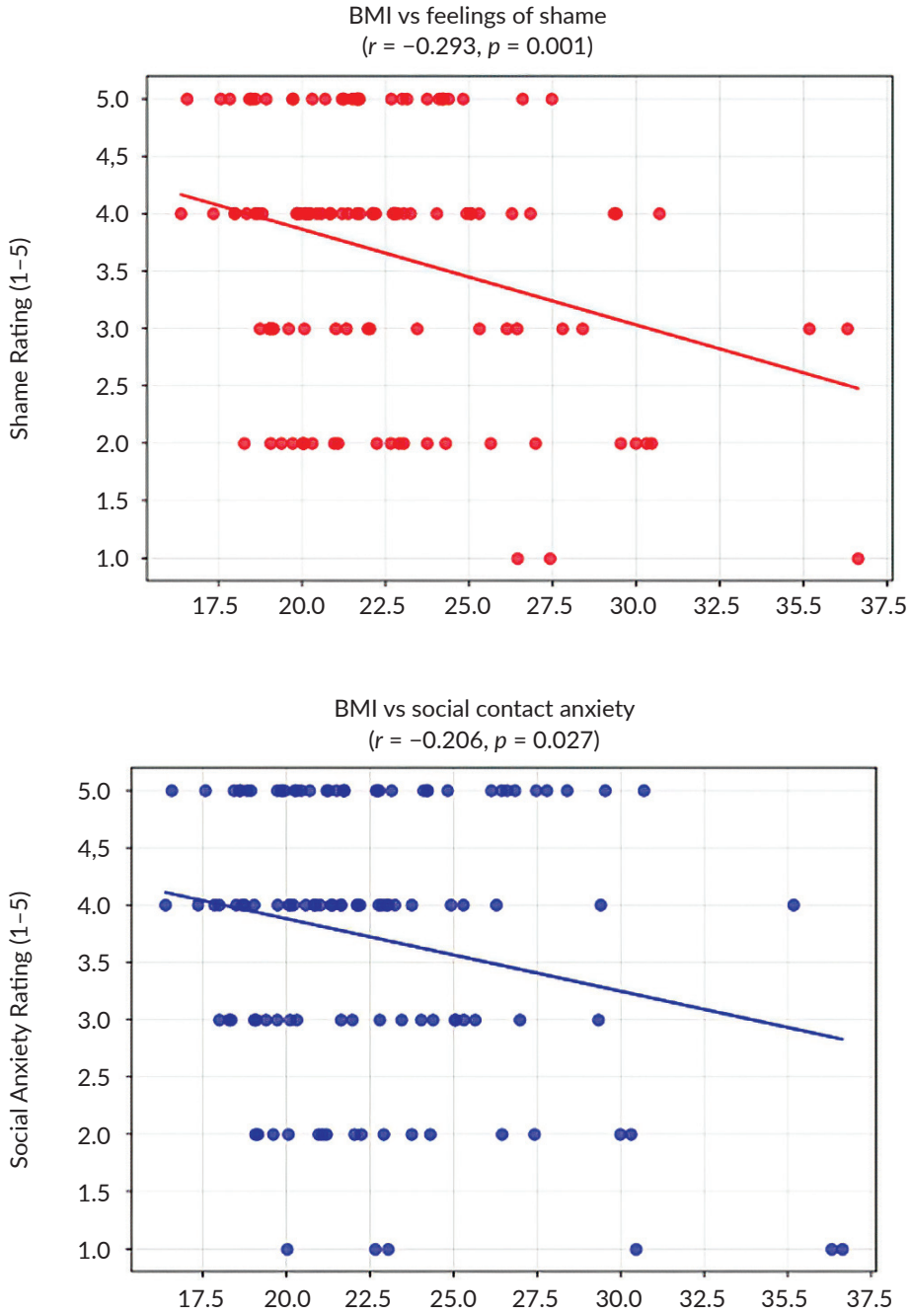

Figure 3. Significant BMI-psychological symptom correlations

life measures in this sample. However, because the validation group included mostly participants without increased BMI, statistically robust conclusions will require studies conducted in larger groups of patients with obesity.

The absence of strong BMI-quality of life relationships in this sample suggests that body weight may not be as deterministic of subjective well-being as commonly assumed. These findings have important implications for healthcare approaches to weight management, emphasizing the need for individualized, culturally sensitive interventions that consider the complex interplay between physical and psychological factors. The unexpected negative correlation with shame warrants further investigation in larger, longitudinal studies to better understand mechanisms underlying weight-related psychological adaptation.

Future research should explore mediating factors such as social support, cultural attitudes toward body image, and coping strategies that may influence the BMI-mental health relationship. Additionally, longitudinal designs would help establish temporal relationships and identify potential causal pathways between weight status and psychological outcomes.

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