

Original Article

The Mediating Role of Self-Compassion in the Relationship Between Family Cohesion, Stress, and Quality of Life with Body Mass Index in Adolescent Girls

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Extended Abstract

Background and Objectives

Adolescence is a critical developmental stage in which physical, psychological, and social factors interact to shape health outcomes. Overweight and obesity during this period are increasingly recognized as significant public health challenges due to their adverse physical, psychological, and behavioral consequences that may persist into adulthood. Body mass index (BMI), although a simple anthropometric measure, is widely used to evaluate and categorize weight status in relation to height. Elevated BMI in adolescence is linked not only to metabolic and cardiovascular disorders but also to psychosocial problems such as low self-esteem, social anxiety, and body image dissatisfaction. Research has indicated that psychological and familial factors, including family cohesion, perceived stress, and quality of life, may influence weight-related outcomes. Self-compassion, characterized by self-kindness, recognition of common humanity, and mindfulness, is a psychological construct that can mediate the relationship between environmental stressors and individual health. This study aimed to investigate the mediating role of self-compassion in the relationship between family cohesion, stress, and quality of life with BMI in adolescent girls.

Materials and Methods

This research employed a descriptive design with multiple linear regression analysis through structural equation modeling (SEM). The statistical population consisted of adolescent girls aged 12–18 years enrolled in high schools in Tehran Province during the year 1400 (2021–2022). A multistage cluster sampling method was implemented: five geographical areas were selected from the 22 districts of Tehran, from each area three educational districts were chosen, followed by three schools per district, and two classes per school. Initially, 250 students were recruited, but after excluding incomplete questionnaires ($n = 50$), the final sample comprised

200 participants. Inclusion criteria included parental consent, literacy in reading and writing, and residency in Tehran Province; exclusion criteria included chronic illness, medication use, and unwillingness to participate. Data collection tools included:

1. **Samani Family Cohesion Scale** – 28 items rated on a five-point Likert scale, measuring emotional bonds and solidarity among family members.
2. **Adolescent Stress Questionnaire (ASQ)** – 56 items assessing ten dimensions of stress, scored on a five-point Likert scale.
3. **WHOQOL-BREF Quality of Life Scale** – 25 items evaluating four domains: physical health, psychological health, social relationships, and environmental health.
4. **Neff's Self-Compassion Scale (SCS)** – 26 items measuring self-kindness, common humanity, and mindfulness versus their negative counterparts.

Data analysis included descriptive statistics (mean, SD, frequency), normality tests (Kolmogorov–Smirnov), Pearson correlation coefficients, and SEM using SPSS-26 and AMOS-24. Model fit indices (χ^2/df , RMSEA, GFI, CFI) were examined, with thresholds indicating acceptable to excellent fit.

Results

Participants' ages ranged from 12 to 24 years ($M = 15.34$), heights from 142 to 185 cm, weights from 30 to 100 kg, and BMI from 12.66 to 33.80 ($M = 21.06$). Model fit indices indicated an overall good fit: $\chi^2/df = 2.033$ (excellent), RMSEA = 0.072 (acceptable), GFI = 0.945 (acceptable), and CFI = 0.964 (excellent). The main hypothesis—that self-compassion mediates the relationship between family cohesion, stress, and quality of life with BMI—was not statistically supported. None of the three predictors (family cohesion, stress, quality of life) significantly predicted BMI via self-compassion. Direct path analyses revealed that family cohesion ($\beta = -0.191$, $p > 0.05$), stress ($\beta = -0.013$, $p > 0.05$), and quality of life ($\beta = 0.059$, $p > 0.05$) were not significant predictors of BMI. Similarly, indirect effects through self-compassion were non-significant. However, the model suggested that self-compassion's positive pole was associated with lower BMI, though this association was modest. Overall, the hypothesized mediation pathways were not confirmed.

Discussion and Conclusion

The findings indicate that, in this sample of adolescent girls, family cohesion, perceived stress, and quality of life do not exert a significant direct or indirect influence on BMI via self-compassion. These results are partly consistent with previous studies showing that psychosocial variables alone may not strongly predict weight status in adolescence, possibly due to the multifactorial etiology of obesity, including genetic, environmental, behavioral, and socio-cultural influences. While cohesive family environments are beneficial for emotional support and coping, they may not directly translate into measurable changes in BMI, especially without targeted lifestyle interventions. Similarly, stress-related eating behaviors may differ in adolescents, with some reducing food intake under acute stress, thereby obscuring any straightforward relationship between stress levels and BMI.

The non-significant role of quality of life as a predictor suggests that its influence on BMI may be mediated through other behavioral and environmental factors, or that the subjective nature of quality of life assessments limits their predictive utility for objective health indices like BMI. The modest link between higher self-compassion and lower BMI supports the notion that cultivating self-compassion may promote healthier self-

regulation and resilience against body image pressures, but its effects may be more pronounced in combination with other psychological and behavioral strategies.

This study underscores the complexity of the relationships between psychosocial variables and BMI in adolescent girls. While self-compassion was hypothesized to mediate these relationships, the results did not support significant mediation effects. These findings highlight the need for multifaceted intervention approaches that integrate psychological skills training, family-based support, and lifestyle modification to address overweight and obesity in adolescence. Future research should explore longitudinal designs to capture changes over time, examine potential moderating variables such as socioeconomic status and cultural attitudes toward body image, and assess the combined impact of self-compassion and health-promoting behaviors. Enhancing self-compassion alongside structured physical activity and nutritional education could contribute to both psychological well-being and healthy weight management in adolescent populations.