

Correlation between Body Composition and Psychological Well-Being among Sedentary Undergraduate Students in Kerala

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Abstract

This study examined the correlation between body composition and psychological well-being among sedentary undergraduate students in Kerala. A total of 120 students (60 males, 60 females), aged 18–24 years, participated. Body composition was measured using BMI, body fat percentage, and muscle mass, while psychological well-being was assessed using Ryff's Psychological Well-Being Scale (1989). Pearson's correlation analysis indicated a significant negative association between body fat percentage and psychological well-being, $r(118) = -.62$, p

$= .001$, suggesting that higher fat levels were linked to lower well-being. Muscle mass was positively correlated with psychological well-being, $r(118) = .56$, $p = .012$, indicating that greater muscle mass predicted better well-being. BMI showed a weak, non-significant negative correlation, $r(118) = -.18$, $p = .064$. These findings suggest that specific components of body composition, particularly body fat and muscle mass, are more relevant indicators of psychological well-being than BMI alone. Interventions encouraging physical activity and balanced nutrition are recommended to enhance both physical and mental health among sedentary undergraduates.

Keywords: body composition, psychological well-being, sedentary lifestyle, undergraduate students, Kerala

1. Introduction

Undergraduate student life often coincides with reduced physical activity, dietary changes, and increased academic stress, which may contribute to sedentary lifestyles. Such lifestyles negatively impact body composition, reflected in higher fat mass and lower lean body mass, and may also impair psychological well-being. Psychological well-being, encompassing self-acceptance, positive relations, autonomy, and life satisfaction, is a crucial determinant of academic performance and overall health.

Previous studies have highlighted that overweight and obesity are associated with lower self-esteem, greater stress, and reduced life satisfaction (McCarthy & Potts, 2019). Conversely, physically active students with healthier body composition demonstrate better mood, confidence, and coping skills (Singh et al., 2021). However, limited evidence exists on this relationship in the context of sedentary undergraduate students in Kerala, where cultural, dietary, and lifestyle factors may play a unique role.

This study, therefore, aimed to examine the correlation between body composition and psychological well-being among sedentary undergraduate students in Kerala.

2. Methods & Materials

2.1 Participants

The study sample consisted of 120 sedentary undergraduate students (60 males, 60 females) aged 18–24 years from various colleges in Kerala. Sedentarism was defined as engaging in less as

150 minutes of moderate physical activity per week (WHO, 2020). Informed consent was obtained, and ethical clearance was secured from the Institutional Ethics Committee.

2.2 Instruments

Body Composition: Height and weight were measured using a stadiometer and digital weighing scale. BMI was calculated as weight (kg)/height (m²). Body fat percentage and muscle mass were assessed using a bioelectrical impedance analyzer (Omron HBF-701).

Psychological Well-Being: Ryff's Psychological Well-Being Scale (1989), a 42-item instrument, was administered. It measures six dimensions: autonomy, environmental mastery, personal growth, positive relations, purpose in life, and self-acceptance.

2.3 Procedure

Participants were tested individually during regular college hours. Body composition was assessed first, followed by completion of the psychological well-being questionnaire in a classroom setting.

2.4 Statistical Analysis

Descriptive statistics (mean, SD) were computed. Pearson's correlation analysis was used to examine relationships between body composition variables and psychological well-being. Data were analyzed using SPSS version 25.

3. Results

Table 1 Descriptive Statistics of Body Composition and Psychological Well-Being

Variables	Male (n = 60)	Female (n = 60)
BMI	23.4 ± 2.9	22.6 ± 3.1
Body Fat %	20.8 ± 2.2	28.3 ± 3.1
Muscle Mass kg	42.1 ± 3.8	32.5 ± 3.4
Psychological well Being	182.5 ± 2.4	176.7 ± 2.8

The descriptive statistics for body composition and psychological well-being are presented in Table 1. Males reported a higher mean BMI ($M = 23.4$, $SD = 2.9$) compared to females ($M = 22.6$, $SD = 3.1$). Body fat percentage was substantially lower among males ($M = 20.8$, $SD = 2.2$) than females ($M = 28.3$, $SD = 3.1$). Conversely, males had greater muscle mass ($M = 42.1$ kg, SD

$= 3.8$) compared to females ($M = 32.5$ kg, $SD = 3.4$). Psychological well-being scores were also higher for males ($M = 182.5$, $SD = 2.4$) than for females ($M = 176.7$, $SD = 2.8$).

Table 2 Correlation between Body Composition and Psychological Well-Being

Variables	r values	p values
BMI	-0.18	0.064
Body fat %	-0.62	0.001
Muscle Mass kg	0.56	0.012

Pearson's correlation analysis revealed a significant negative relationship between body fat percentage and psychological well-being, $r(118) = -0.62$, $p = .001$, indicating that students with higher fat levels reported lower well-being. Muscle mass was positively correlated with psychological well-being, $r(118) = 0.56$, $p = .012$. BMI showed a weak, non-significant negative relationship with psychological well-being, $r(118) = -0.18$, $p = .064$.

Results indicate that higher body fat percentage is significantly associated with lower psychological well-being, while greater muscle mass is positively correlated with psychological well-being. BMI showed a weak negative but non-significant relationship.

4. Discussion

The findings demonstrate a clear association between body composition and psychological well-being among sedentary undergraduate students in Kerala. Consistent with earlier studies (Singh et al., 2021; McCarthy & Potts, 2019), students with higher body fat reported lower well-being, while those with greater muscle mass reported higher psychological well-being.

Possible explanations include body image dissatisfaction, social stigma, and reduced physical efficiency associated with higher fat levels, which may negatively impact mental health. Conversely, greater lean muscle mass may enhance self-confidence, vitality, and resilience, contributing positively to psychological well-being.

Interestingly, BMI did not show a significant correlation, suggesting that specific components of body composition (fat vs. muscle) may be more relevant indicators than BMI alone. This aligns with recent recommendations that direct measures of fat and muscle provide more accurate insights into health outcomes.

5. Conclusion

The study concludes that body composition, particularly body fat percentage and muscle mass, is significantly correlated with psychological well-being among sedentary undergraduate students in Kerala. Interventions promoting physical activity and balanced nutrition should be incorporated into higher education to improve both physical and psychological health.

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