

Stress, Diet, and Well-Being: An Interdisciplinary Study of Mental Health and Well-Being in University Students

*Yashwanth G Naik., Skanda A G., Meghana A T., Dr. Raghavendra S N

Department of Food Science, St. Aloysius (Deemed to be University), Mangaluru, Karnataka

***Corresponding Author**

DOI: <https://doi.org/10.47772/IJRISS.2026.1017PSY0049>

Received: 03 August 2026; Accepted: 08 August 2026; Published: 20 August 2026

ABSTRACT

Psychological stress among university students represents an increasingly significant public health issue. This stress affects multiple interconnected systems: mental health, eating behaviors, appetite regulation, and metabolic processes. Understanding these connections is essential for developing comprehensive approaches to student well-being. When students experience chronic stress, their bodies release glucocorticoids, which trigger a cascade of physiological changes. These hormonal shifts can suppress appetite, disrupt nutrient metabolism, reduce insulin sensitivity, and promote the accumulation of visceral fat. Together, these effects elevate the risk of obesity and related metabolic disorders. This study explores how psychological stress, eating behaviors, and nutritional status interact in university students. It considers the prevalence of stress-related nutritional issues, identifies whether these effects differ between genders, and explains the biological and behavioral mechanisms at work. The goal is to provide evidence-based insights that can inform mental health interventions and strategies to support student well-being.

INTRODUCTION

Psychological stress among college students is an increasingly significant public health issue that impacts various interconnected biological systems (Jovanovska & Manchevska, 2025). Stress plays a significant role in mental well-being and influences eating patterns (Xue et al., 2026). The pathophysiology of stress-related obesity is notably intricate. Stress is linked to the development of obesity through two primary mechanisms: by modifying energy intake and expenditure, and by promoting the accumulation of visceral fat leading to abdominal obesity (Paredes & Ribeiro, 2014). This visceral fat storage is particularly concerning as it is metabolically active and directly linked to insulin resistance and metabolic irregularities (Ortiz et al., 2026). Prolonged stress disrupts various physiological systems, including appetite control, digestion, nutrient metabolism, and immune response, resulting in a wide array of health issues (Siqueira et al., 2025).

The glucocorticoid pathway plays a pivotal role in the comprehension of stress-induced metabolic modifications. Prolonged exposure to stress among students leads to the secretion of glucocorticoids, predominantly cortisol, initiating a series of physiological changes (DeFronzo & Auchus, 2025). These endocrine variations can lead to appetite suppression, disruption of nutrient processing, decreased insulin sensitivity, and the promotion of visceral adiposity (Kuckuck et al., 2022). Moreover, stress-induced glucocorticoid release is directly linked to insulin resistance and the development of type 2 diabetes (Sunena & Mishra, 2022). Evidence suggests that an excess of glucocorticoids can induce cellular senescence and expedite metabolic aging in critical metabolic tissues (Santillan et al., 2026).

The examination of gender-specific disparities in stress responses represents a significant yet inadequately explored dimension. Studies reveal that female students exhibit heightened susceptibility to stress-related eating disorders and nutritional irregularities, influenced by societal expectations, body image concerns, and performance-related stress (Fowler & Wareham-Fowler, 2025). Male and female students frequently adopt distinct coping strategies and metabolic reactions when faced with similar stressors (Nellithalapura et al., 2026).

However, determinants of stress prevalence in college students and its association with nutritional status (NS) remain inadequately defined, particularly within non-Western educational contexts. This study was conducted to compare physical and personal indicators of stress with nutritional status, dietary habits of undergraduate (UG) and postgraduate (PG) students studying at a university college in Mysore, with the specific aim of evaluating the prevalence of stress-related nutritional issues, identifying whether stress effects differ between genders and academic levels, elucidating the biological and behavioral mechanisms linking psychological stress to altered nutritional status, and generating evidence-based insights that can inform targeted mental health interventions and strategies to support holistic student well-being. This study aimed to examine the relationship between physical stress indicators, psychological stress factors, and nutritional status among undergraduate and postgraduate students enrolled at a university college in Mysore, with particular attention to their dietary habits.

MATERIALS AND METHODS

Sample: The sample comprised 111 undergraduate (UG) and 96 postgraduate (PG) students studying at a university college in Mysore.

Data Collection and Data Analysis

A cross-sectional observational study involving 207 undergraduate and postgraduate students aged 18–22 in Mysuru, Karnataka, was conducted; data were collected via a structured, self-administered questionnaire along with the assessment of their nutritional status (NS). The questionnaire had three parts: Part A for socio-demographic variables, Part B for stress indicators, and Part C had questions about their dietary habits and eating patterns. Nutritional status was determined using Body Mass Index (BMI), with comparative analyses exploring stress-nutrition links across gender and academic levels.

RESULTS

Findings and Discussion

Data collected from 207 undergraduate and postgraduate students (111 UG, 96 PG) studying at a university college in Mysuru were systematically analyzed. The sample consisted of 65.83% female students and 32.81% male students across both academic levels. The findings reveal significant gender-based differences in stress manifestation and nutritional status, with pronounced variations across body mass index (BMI) categories.

Stress Indicators by Gender and BMI Status

Table 1: Stress and BMI status of Mysuru university students by gender.

CLASS	BMI	TOTAL	PHYSICAL INDICATOR				PERSONAL INDICATOR			
			FEMALE		MALE		FEMALE		MALE	
			FUS/TF	% OF FEMALE	MUS/TM	% OF MALE	FUS/TF	% OF FEMALE	MUS/TM	% OF MALE
UG	UW	41	18/27.	66.66	5/14.	35.71	12/22.	54.54	9/19.	47.36
	NW	56	29/40.	72.5	4/16.	25	33/43.	76.74	3/13.	23.03
	OW	14	4/7.	57.71	3/7.	42.85	4/7.	57.71	3/7.	42.85
	MEAN %			65.623333		34.52		62.996667		37.746667
STANDARD DEVIATION				7.4492975		8.984303		12.007149		12.942961
PG	UW	29	3/9.	33.33	14/20.	70	29/29.	100	0	0

	NW	52	34/41.	78.04	2/11.	18.18	41/46.	89.13	1/6.	16.66
	OW	15	15/15.	100	0	0	15/15.	100	0	0
	MEAN %			70.456667		29.393333		96.376667		5.5533333
	STANDARD DEVIATION			33.975762		36.322226		6.2757974		9.6186555

UG/PG=Undergraduate/Postgraduate,UW/NW/OW=Underweight/Normalweight/Overweight,FUS/TF= Female under stress/Total female, MUS/TM= Male under stress/Total male.

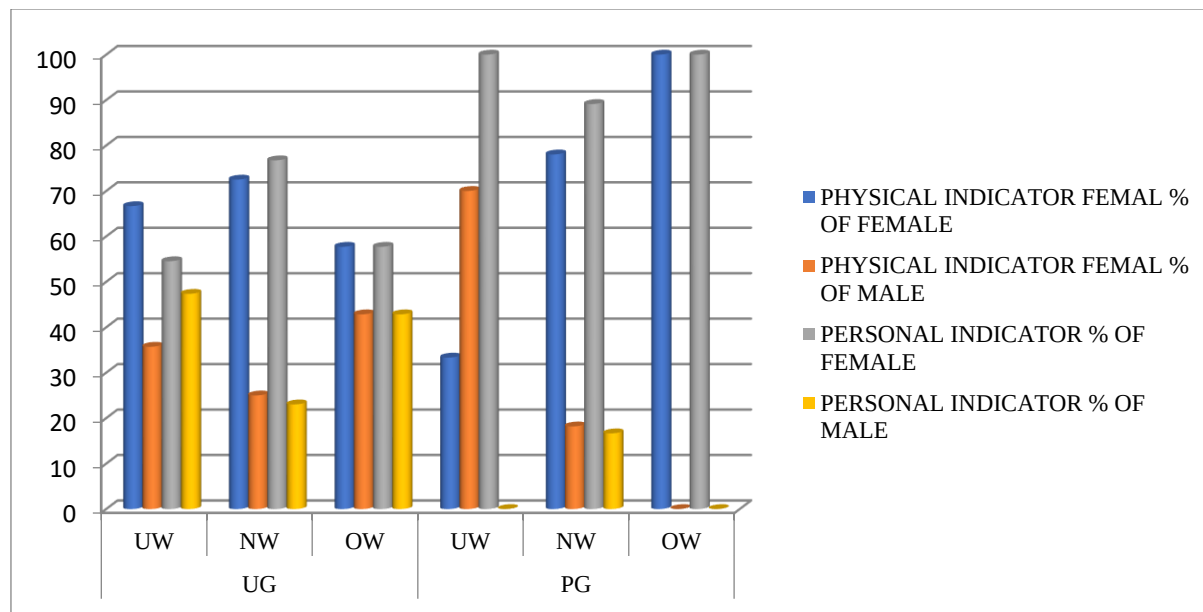


Fig 1: Physical and personal stress based on BMI by gender

Physical Indicators of Stress

Among undergraduate (UG) students, notable differences emerged across BMI categories. Underweight females reported physical stress symptoms at a rate of 66.66%, while normal weight females demonstrated the highest prevalence among undergraduates at 72.5%. Interestingly, overweight females showed a lower prevalence at 57.71%, suggesting a non-linear relationship between BMI and physical stress manifestation at this academic level. In contrast, male students demonstrated consistently lower stress across all BMI categories, with a mean prevalence of only 34.52% — substantially lower than their female counterparts.

Among postgraduate (PG) students, the gender disparities became markedly more pronounced. Underweight females reported physical stress at 33.33%, a notable decrease from undergraduate levels. However, normal weight females exhibited the highest overall prevalence of physical stress at 78.04%, representing a dramatic increase that suggests heightened vulnerability during postgraduate years. Most strikingly, all overweight females at the postgraduate level (100%) reported physical stress indicators, demonstrating universal stress manifestation in this group. In sharp contrast, overweight males at the postgraduate level reported 0% physical stress — a complete absence of physical stress symptoms despite sharing identical weight categories with their female peers. Male students more generally remained consistently below 15% across all BMI categories at the postgraduate level, further emphasizing the profound gender divergence in stress responses during advanced academic training.

Personal Indicators of Stress

Personal stress assessment revealed even sharper gender differences than physical indicators. Among undergraduate students, females demonstrated a mean stress prevalence of 62.99%, with normal-weight females showing particularly elevated levels of personal distress. In contrast, undergraduate males exhibited a mean

stress prevalence of only 34.52%, representing a gender disparity of approximately 28.47 percentage points. Among postgraduate students, the gender differences became even more pronounced and striking. All female postgraduate students (100%) reported high personal stress indicators irrespective of their nutritional status, demonstrating universal vulnerability to personal stress regardless of weight category. This finding is particularly notable as it shows that BMI classification does not protect postgraduate females from psychological stress. In sharp contrast, less than 15% of male postgraduate students reported personal stress, demonstrating remarkable resilience across all BMI categories and further emphasizing the profound gender divergence in stress responses and coping mechanisms during advanced academic training.

BMI-Independent Stress Vulnerability in Females

A critical finding emerged: normal-weight females showed stress levels exceeding 70%, challenging the assumption that nutritional status alone determines psychological stress. This indicates that gender operates as a powerful independent predictor of stress manifestation, separate from weight-related factors.

Demographic and Anthropometric Distribution

Age and Gender Distribution

The sample exhibited a female-predominant composition across both academic levels. Among undergraduate students aged 18-21 years, the sample comprised 111 students, of which 63.96% were female. Similarly, among postgraduate students aged 21-22 years, the sample consisted of 96 students, with 67.70% being female.

Table 2: Lifestyle characteristics and BMI status of Mysore university students by gender.

VARIABLE	TOTAL STUDENTS	FEAMLE		MALE	
AGE GROUP		NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
18-21(UG)	111	74	63.96%	37	33.33%
21-22(PG)	96	65	67.70%	31	32.29%
MEAN %			65.83%		32.81%
BMI (UG)					
UW(<20kg/m2)	41	27	65.85%	14	34.14%
N(20-25kg/m2)	56	40	71.42%	16	28.57%
OW(>25kg/m2)	14	7	50%	7	50%
MEAN %			62%		38%
BMI(PG)					
UW(<20kg/m2)	29	9	31.03%	20	68.96%
N(20-25kg/m2)	52	41	76.84%	11	21.15%
OW(>25kg/m2)	15	15	100%	0	0.00%
MEAN %			69.29%		30.04%

HEIGHT					
4'0"-4'9"	82	73	89%	9	11%
5'0"-5'9"	113	61	54%	52	46%
6'0"-6'9"	12	5	42%	7	58%
MEAN %			62%		38%

BMI Distribution Across Academic Levels

Undergraduate students showed relatively balanced BMI distribution across weight categories. Among the underweight category (BMI < 20 kg/m²), there were 41 students comprising 66.85% female and 34.14% male participants. The normal weight category (BMI 20-25 kg/m²) comprised 56 students with 71.42% female and 28.58% male distribution. In the overweight category (BMI > 25 kg/m²), there were 14 students with an equal 50% female and 50% male representation.

Postgraduate students demonstrated concerning BMI trends with marked gender disparities. The underweight category (BMI < 20 kg/m²) included 29 students with 31.03% female and 68.97% male participants, showing a reversal of the undergraduate pattern. The normal weight category (BMI 20-25 kg/m²) contained 52 students with 76.84% female and 21.15% male representation. Most strikingly, the overweight category (BMI > 25 kg/m²) comprised 15 students, 100% of whom were female.

This distribution reveals a striking transition from undergraduate to postgraduate levels: while undergraduate overweight students were evenly distributed by gender with 50% female and 50% male representation, the postgraduate overweight category comprised exclusively female students with complete male absence.

Height Distribution

Height measurements across the sample revealed notable gender-based variation across stature categories. In the below-150 cm category, there were 82 students with 89% female representation, demonstrating the highest female concentration. The 150-159 cm category comprised 113 students with 54% female representation, showing a relatively balanced but still female-predominant distribution. In the 160-169 cm category, there were 12 students with 42% female representation, representing the lowest female proportion. Overall, the height distribution reflects the demographic composition of the sample, with greater female representation concentrated in the shorter stature categories.

Stress-Induced Behavioral and Nutritional Changes

The elevated stress levels, particularly among female students, were accompanied by significant behavioral modifications that disrupted normal nutritional patterns and eating habits. Emotional and binge eating patterns emerged as the primary coping mechanisms through which students attempted to manage their psychological distress. These maladaptive eating responses were further intensified by dietary habit disruptions characterized by increased consumption of high-calorie, energy-dense foods. Concurrently, body image dissatisfaction created a reinforcing cycle that intensified stress-eating behaviors, particularly in female students experiencing societal body-image pressures. Academic competition and societal pressures further amplified these effects, driving additional maladaptive eating behaviors and unhealthy coping strategies. At the physiological level, hormonal dysregulation resulting from chronic stress promoted altered nutrient metabolism and metabolic dysfunction, creating a bidirectional relationship between psychological stress and nutritional status disruption.

CONCLUSION

This cross-sectional study of 207 university students (111 undergraduate, 96 postgraduate) reveals that gender emerges as a powerful independent predictor of psychological stress, transcending BMI categories and academic

levels. Postgraduate females demonstrated universal stress vulnerability with 100% of overweight females reporting stress indicators versus 0% of overweight males, while undergraduate females averaged 65.62% stress prevalence compared to 34.52% in males. Critically, normal-weight females exhibited stress levels exceeding 70%, demonstrating that optimal nutritional status provides no protection against psychological stress. Stress intensity increased from 65.62% (undergraduate) to 70.46% (postgraduate) in females, and notably, all 15 overweight postgraduate students were female, suggesting gender-specific metabolic and psychosocial responses to chronic academic stress. This BMI-independent vulnerability indicates that psychosocial and gender-specific factors—not weight alone—determine mental health outcomes.

Psychological stress operates through interconnected pathways: hormonal-metabolic (glucocorticoid-induced appetite disruption and visceral fat accumulation), behavioral-emotional (stress-triggered eating in females), psychosocial-cognitive (body image and academic pressures) and academic-developmental (cumulative burden with progression). Current interventions addressing BMI alone are insufficient. Immediate institutional priorities include mandatory gender-specific stress screening, integrated mental health and nutritional counseling, and peer support addressing body image and academic pressure. Evidence-based interventions should emphasize cognitive-behavioral stress management and mindfulness training for female students, particularly postgraduates, combined with integrated psychological-nutritional support rather than dietary advice alone. Future research must employ longitudinal designs tracking stress-nutrition relationships, investigate sociocultural factors driving gender-specific stress patterns, and examine stress-triggered eating behaviors differentiated by gender across academic progression.

REFERENCE

1. C, X., H, P., G, L., J, F., X, W., B, Z., P, L., Z, L., & W, T. (2026). Exploring the relationship between family support and eating behaviors among college students with subjective well-being as the central mediating variable. <https://doi.org/10.3389/fpsyg.2026.1735152>
2. CM, S., M, A., S, M., & FA, H. (2026). "Glucocorticoids, Cushing's syndrome and cellular senescence: A mechanistic link to metabolic ageing." <https://doi.org/10.1530/ec-26-0197>
3. Fowler, K., & Wareham-Fowler, S. (2025). University student eating disorder risk and psychological distress: Exploring gender differences in academic and social factors, loneliness, university belongingness, well-being, and help-seeking. *Journal of College Student Mental Health*. <https://doi.org/10.1080/28367138.2025.2532411>
4. GG, R. O., R, G., L, M.-C., & A, A.-Q. (2026). Nutrition patterns, metabolic and psychological state among high-weight young adults: A network approach. <https://doi.org/10.3390/nu18010145>
5. Jovanovska, S. G., & Manchevska, S. (2025). The association between perceived stress and eating patterns among university students. *Journal of Morphological Sciences*. <https://doi.org/10.55302/jms258201gj>
6. Kuckuck, S., Valk, E. S. van der, Scheurink, A., Voorn, B. van der, Iyer, A. M., Visser, J., Delhanty, P., Berg, S. V. D. van den, & Rossum, E. V. van. (2022). Glucocorticoids, stress and eating: The mediating role of appetite-regulating hormones. *Obesity Reviews*. <https://doi.org/10.1111/obr.13539>
7. Nellithalapura, R. N., Rachappa, P., Khanum, U., Chalil, A. K., Puttaraju, N. H., & Nagaraju, C. (2026). A gender-based analysis of stress-induced eating behaviours and their health implications among college students in different states. *Journal of Health and Allied Sciences NU*. https://doi.org/10.25259/jhasnu_202_2025
8. Paredes, S., & Ribeiro, L. (2014). Cortisol: The villain in metabolic syndrome? *Revista da Associação Médica Brasileira*. <https://doi.org/10.1590/1806-9282.60.01.017>
9. RA, D., & RJ, A. (2025). Cushing syndrome, hypercortisolism, and glucose homeostasis: A review. <https://doi.org/10.2337/db25-0120>
10. Siqueira, R. P., Lira, C. R. N. de, Cunha, C. M., Farias Costa, P. R. de, & Conceição-Machado, M. E. P. (2025). Influence of mental health on eating practices among university students during the COVID-19 pandemic: A systematic review. *Journal of Health Psychology*. <https://doi.org/10.1177/13591053251361714>
11. Sunena, & Mishra, D. (2022). Stress etiology of type 2 diabetes. *Current Diabetes Reviews*. <https://doi.org/10.2174/1573399818666220224140934>