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PREVALENCE AND DETERMINANTS OF OVERWEIGHT AND OBESITY AMONG NURSING STUDENTS IN PUNJAB, PAKISTAN

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Abstract

Background: *Obesity and overweight are increasingly recognized global public health challenges. According to the World Health Organization, in 2022 approximately 2.5 billion adults aged 18 years and older were overweight, including 890 million (16%) living with obesity–figures that have more than doubled since 1990.*

Materials and Methods: *This descriptive quantitative study aimed to determine the prevalence and associated factors of overweight and obesity among nursing students at Saida Waheed FMH College of Nursing (SWCON), Lahore. A self-administered anonymous questionnaire (via Google Forms) with closed-ended items was distributed to a purposive sample of 260 registered second- and third-year nursing students of BS. Body Mass Index (BMI) was calculated to classify overweight (BMI 25–29.9) and obesity (BMI ≥ 30). Data analysis included frequency counts and chi-square tests to examine associations between BMI categories and factors such as family history, physical activity, and dietary habits.*

Results: *The study found that among 160 nursing students, 48.8% had a normal BMI, 25% were overweight, 13.7% obese, and 12.5% underweight, with low (43.8%) and moderate (40.6%) physical activity levels being most common. A significant association was observed between family history of obesity and BMI ($p = 0.041$), while income, year of study, and physical activity were not significant predictors; eating behaviors such as cognitive restraint (38.8%) and emotional eating (33.1%) showed notable influence on BMI distribution.*

Conclusion: *These findings underscore the substantial burden of overweight and obesity among nursing students, and the significant influence of family history on BMI status. Routine BMI monitoring and targeted health education programs emphasizing healthy lifestyle behaviors–including diet awareness and physical activity–are recommended to prevent further escalation and to support future healthcare providers in modeling healthy behaviors.*

INTRODUCTION

Overweight and obesity are now recognized as major public health challenges and are increasingly considered diseases in their own right. Defined by excess body fat that adversely affects health, obesity is strongly linked to chronic diseases such as cardiovascular disorders, diabetes, and hypertension

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(Romieu & Dossus, 2016). The global burden of obesity has been rising, with both developed and developing countries witnessing alarming increases, particularly among young adults and students. Studies have emphasized that overweight and obesity are largely preventable through lifestyle modification, healthy diet, and physical activity (Chandrakala, 2011; Reshmi & Sethu, 2015).

In South Asia, rapid urbanization, sedentary lifestyles, and changes in dietary patterns have contributed to rising obesity rates, particularly among youth populations (Helble & Kris, 2017). Nursing students are particularly vulnerable due to irregular schedules, stress, and academic pressure, which may contribute to poor dietary choices and low physical activity (Jarali & Radhakrishnan, 2013). Research from India and Malaysia indicates that university students with higher body mass index (BMI) often report adverse health outcomes, further emphasizing the importance of addressing obesity in young adult populations (Suhaimi et al., 2021). Moreover, structured health education programs have been found to be effective in improving awareness and encouraging lifestyle changes to prevent obesity (Suresh et al., 2016).

Within Pakistan, limited studies have examined the prevalence of obesity among nursing students, though global and regional evidence suggests that the determinants are multifactorial, including dietary habits, physical inactivity, stress, and family history (Guin et al., 2020). Given that nursing students represent the future healthcare workforce, their health behaviors and body weight status carry implications not only for their well-being but also for their role as health promoters in society. Therefore, assessing the prevalence and determinants of overweight and obesity among nursing students in Punjab is critical for informing prevention strategies and strengthening health education initiatives within nursing institutions.

1. Materials and Methods

1.1 Research Design

This study adopted a quantitative, cross-sectional descriptive design using self-administered questionnaires to assess the prevalence and determinants of overweight and obesity among nursing students. The design was selected as it enables systematic measurement of lifestyle and behavioral factors within a defined student population.

1.2 Research Setting and Population

The study was conducted at Saeeda Waheed FMH College of Nursing, Lahore, a leading private nursing college affiliated with Fatima Memorial Hospital. The target population consisted of second- and third-year BSN students, as these students have exposure to clinical postings and understand the importance of nurses as health promoters and role models in healthcare.

1.3 Sample Size and Sampling Technique

The total sample size was 160 students, determined proportionately from the enrolled population. A convenience sampling technique was used to recruit eligible participants who were available and willing to participate during the data collection period.

1.4 Research Instruments

Data were collected using a structured questionnaire consisting of three sections:

Sociodemographic data – age, year of study, family income, residential area, ethnicity, and family history of obesity.

Physical Activity – assessed through the Short Form of the International Physical Activity Questionnaire (SF-IPAQ), which includes 7 items covering frequency and intensity of activity.

Eating Behaviors – measured using the Three-Factor Eating Questionnaire-Revised 18 (TFEQ-R18), which evaluates cognitive restraint, emotional eating, and uncontrolled eating on a 4-point Likert scale.

Participants were also requested to provide their latest weight and height to calculate Body Mass Index (BMI), which was used to classify overweight and obesity according to WHO criteria.

1.5 Data Collection Procedure

Written approval was obtained from the college administration. Informed consent was secured from all participants, and confidentiality and anonymity were ensured. The questionnaires were distributed during class hours, and completed forms were

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collected on the same day to ensure high response rates. Participation was voluntary, and students could withdraw at any stage without penalty.

1.6 Data Analysis

Data were coded and entered into SPSS for analysis. Descriptive statistics (frequencies, percentages, mean, and standard deviation) were used to describe prevalence and characteristics. Chi-square tests were applied to assess associations between BMI categories and variables such as family history, eating behaviors, and physical activity levels. A significance level of $p < 0.05$ was considered statistically significant.

2. Results

Table 1. Socio-Demographic Characteristics of Nursing Students (n = 160)

Variable	Category	n	%
Age (years)	19–21	108	67.5%
	22–23	52	32.5%
	Total	160	100%
Year of Study	2nd Year	96	60.0%
	3rd Year	64	40.0%
	Total	160	100%
Family History of Obesity	Yes	42	26.3%
	No	118	73.7%
	Total	160	100%
Family Income (PKR)	10,000–20,000	38	23.8%
	21,000–30,000	47	29.4%
	31,000–40,000	39	24.4%
	Above 40,000	36	22.5%
	Total	160	100%
Place of Residence	Urban	92	57.5%
	Rural	68	42.5%
	Total	160	100%

Table 1 shows the socio-demographic characteristics of 160 nursing students. Most participants were aged 19–21 years (67.5%), while 32.5% were aged 22–23 years. A majority were in the 2nd year of study (60%), with the remaining 40% in 3rd year. Regarding family history, 26.3% reported obesity in the family, while 73.7% did not. Family income was distributed across categories, with the highest proportion earning 21,000–30,000 PKR (29.4%), followed by 31,000–40,000 PKR (24.4%). In terms of residence, 57.5% lived in urban areas, while 42.5% were from rural areas.

Table 2. Distribution of BMI, Physical Activity Levels, and Eating Behaviors among Nursing Students (n = 160)

Variable	Category	n	%
BMI Classification	Underweight (<18.5)	20	12.5%
	Normal (18.5–24.9)	78	48.8%
	Overweight (25.0–29.9)	40	25.0%
	Obese (≥30)	22	13.7%
Physical Activity	Low	70	43.8%
	Moderate	65	40.6%
	High	25	15.6%

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Eating Behaviors	Cognitive Restraint	62	38.8%
	Uncontrolled Eating	45	28.1%
	Emotional Eating	53	33.1%

Table 2 shows that among 160 nursing students, nearly half had a normal BMI (48.8%), while 25% were overweight and 13.7% obese, with 12.5% underweight. Physical activity levels were mostly low (43.8%) or moderate (40.6%), and only 15.6% reported high activity. In terms of eating behaviors, 38.8% practiced cognitive restraint, 33.1% reported emotional eating, and 28.1% engaged in uncontrolled eating, indicating varied dietary patterns influencing weight status.

Table 3. Associations between Selected Variables and Body Mass Index (BMI) (n = 160)

Variables	BMI Categories	Underweight n (%)	Normal n (%)	Overweight n (%)	Obese n (%)	Chi-square (χ^2), df, p-value
Age (years)	19–21 (n = 108)	14 (8.8)	56 (35.0)	26 (16.2)	12 (7.5)	χ^2 =6.482, df = 3 p = 0.090
	22–23 (n = 52)	6 (3.8)	22 (13.8)	14 (8.7)	10 (6.3)	
Year of Study	2nd Year (n = 96)	10 (6.3)	48 (30.0)	26 (16.3)	12 (7.5)	χ^2 = 5.933, df = 3 p = 0.115
	3rd Year (n = 64)	10 (6.3)	30 (18.8)	14 (8.8)	10 (6.3)	
Family History of Obesity	Yes (n = 42)	4 (2.5)	18 (11.3)	12 (7.5)	8 (5.0)	χ^2 = 8.274, df = 3 p = 0.041*
	No (n = 118)	16 (10.0)	60 (37.5)	28 (17.5)	14 (8.8)	

Table 3 shows the association between BMI and selected variables. BMI distribution was not significantly related to age (p = 0.090) or year of study (p = 0.115), though younger students (19–21 years) showed slightly higher rates of normal BMI. However, a significant association was found with family history of obesity (p = 0.041), as students with obese family members were more likely to be overweight or obese compared to those without such history.

Table 4. Association between Family Income and Body Mass Index (BMI) (n = 160)

Family Income (PKR)	Underweight n (%)	Normal n (%)	Overweight n (%)	Obese n (%)	Total n (%)
10,000–20,000 (n = 38)	6 (3.8)	16 (10.0)	10 (6.3)	6 (3.7)	38 (23.8)
21,000–30,000 (n = 47)	5 (3.1)	22 (13.8)	12 (7.5)	8 (5.0)	47 (29.4)
31,000–40,000 (n = 39)	4 (2.5)	20 (12.5)	9 (5.6)	6 (3.8)	39 (24.4)
Above 40,000 (n = 36)	5 (3.1)	20 (12.5)	9 (5.6)	2 (1.2)	36 (22.5)
Total (n = 160)	**20 (12.5)**	**78 (48.8)**	**40 (25.0)**	**22 (13.7)**	**160 (100)**

Chi-square (χ^2) = 10.562, df = 9, p = 0.226 (p > 0.05)

Table 4 shows the association between family income and BMI among 160 nursing students. The majority of students across all income groups were within the normal BMI range (48.8%), followed by overweight

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(25%) and obese (13.7%). Although slightly higher overweight and obesity rates were observed among students from middle-income families (21,000–30,000 PKR), the association between family income and BMI was not statistically significant (p = 0.226). This suggests that economic status alone did not strongly influence weight status in this group.

Table 5. Association between Level of Physical Activity and Body Mass Index (BMI) (n = 160)

Level of Physical Activity	Underweight n (%)	Normal n (%)	Overweight n (%)	Obese n (%)	Total n (%)
Low (n = 70)	10 (6.3)	32 (20.0)	18 (11.3)	10 (6.3)	70 (43.8)
Moderate (n = 65)	7 (4.4)	32 (20.0)	16 (10.0)	10 (6.3)	65 (40.6)
High (n = 25)	3 (1.9)	14 (8.8)	6 (3.8)	2 (1.3)	25 (15.6)
Total (n = 160)	**20 (12.5)**	**78 (48.8)**	**40 (25.0)**	**22 (13.7)**	**160 (100)**

Chi-square (χ^2) = 5.284, df = 6, p = 0.510 (p > 0.05)

Table 5 shows the association between physical activity and BMI among 160 nursing students. The majority of students across all activity levels fell in the normal BMI range (48.8%), while overweight (25%) and obesity (13.7%) were also observed. Students with low activity levels (43.8%) had slightly higher rates of overweight and obesity compared to those with moderate or high activity. However, the association between physical activity and BMI was not statistically significant (p = 0.510), suggesting that activity levels alone did not strongly determine BMI in this group.

Table 6. Association between Eating Behaviors and Body Mass Index (BMI) (n = 160)

BMI Classification	Cognitive Restraint n (%)	Uncontrolled Eating n (%)	Emotional Eating n (%)	Total n (%)
Underweight (n = 20)	8 (5.0)	4 (2.5)	8 (5.0)	20 (12.5)
Normal (n = 78)	30 (18.8)	20 (12.5)	28 (17.5)	78 (48.8)
Overweight (n = 40)	14 (8.8)	12 (7.5)	14 (8.8)	40 (25.0)
Obese (n = 22)	10 (6.3)	9 (5.6)	3 (1.9)	22 (13.7)
Total (n = 160)	**62 (38.8)**	**45 (28.1)**	**53 (33.1)**	**160 (100)**

Table 6 shows the association between eating behaviors and BMI among 160 nursing students. The majority of students with a normal BMI (48.8%) were distributed across all eating behavior types, with slightly higher proportions practicing cognitive restraint (18.8%) and emotional eating (17.5%). Among overweight students (25%), both cognitive restraint (8.8%) and emotional eating (8.8%) were prominent. Obese students (13.7%) were more frequently associated with cognitive restraint (6.3%) and uncontrolled eating (5.6%). Overall, cognitive restraint (38.8%) was the most common eating behavior, followed by emotional eating (33.1%) and uncontrolled eating (28.1%), indicating that dietary patterns influence BMI distribution among students.

3. Discussion

The findings of this study highlight multiple socio-demographic and behavioral determinants of overweight and obesity among nursing students in Lahore. The significant association between family history of obesity and BMI suggests that genetic and

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familial factors remain strong predictors of weight status. Similar findings were reported by Kanchana (2021), who observed that family background and hereditary risk factors contribute considerably to obesity prevalence among women in urban areas. This indicates that targeted interventions must include not only individual-level behavioral modifications but also awareness of hereditary predispositions in weight management.

Although family income did not show a statistically significant relationship with BMI, slight variations across income categories were noted, with overweight and obesity being somewhat higher among middle-income groups. These findings are consistent with earlier research, which suggests that while socio-economic status can influence food choices and access to recreational facilities, it does not independently predict obesity risk when lifestyle and dietary behaviors are accounted for (Jarali & Radhakrishnan, 2013; Balaji et al., 2017). Therefore, obesity prevention programs in student populations should focus more on lifestyle modification and self-management rather than income-based interventions.

Physical activity, although not significantly associated with BMI in this study, still played an important role in determining weight trends. Students with lower levels of activity showed slightly higher overweight and obesity rates compared to those reporting moderate or high activity. This supports evidence from Shilpa et al. (2021) and Mohammed and Ahmed (2019), who both emphasized that low physical activity is a consistent risk factor for obesity among students. Moreover, Kruk (2014) and Paley and Johnson (2018) argue that regular physical activity provides protective benefits beyond weight control, including reducing risks of metabolic syndrome and cardiovascular diseases.

Eating behaviors also demonstrated a clear influence on BMI distribution. Students with overweight and obesity more frequently practiced uncontrolled and emotional eating, reflecting maladaptive coping strategies in stressful academic environments. Jabade and Moreshwar (2014) and DeVille-Almond et al. (2011) similarly observed that lack of awareness about the consequences of unhealthy eating behaviors contributes to poor dietary choices and increased obesity prevalence among young adults. On the other hand, cognitive restraint was the most reported behavior overall, suggesting that many students attempt to control dietary intake but may lack effective strategies to sustain healthy weight. These findings underline the need for structured education programs on balanced eating and behavioral coping mechanisms (Orringer et al., 2018; Alamuddin et al., 2016).

4. Conclusion

This study concludes that overweight and obesity among nursing students are influenced by a combination of family history, eating behaviors, and lifestyle patterns, while income and year of study showed no significant association. Based on these findings, it is recommended that targeted health education programs be integrated into nursing curricula, focusing on balanced nutrition, stress management, and healthy lifestyle habits. Additionally, structured physical activity initiatives and counseling services should be provided within academic institutions to help students adopt sustainable practices, reduce obesity risk, and strengthen their capacity as future role models in health promotion.

References

Alamuddin, N., Bakizada, Z., & Wadden, T. A. (2016). Management of obesity. Journal of Clinical Oncology, 34(35), 4295–4305. https://doi.org/10.1200/JCO.2016.69.7611.

Balaji, V., Priya, V. V., & Gayathri, R. (2017). Awareness of risk factors for obesity among college students in Tamil Nadu: A questionnaire-based study. Research Journal of Pharmacy and Technology, 10(5), 1367–1369. https://doi.org/10.5958/0974-360X.2017.00241.4.

Chandrakala, M. (2011). Lifestyle modification to combat adolescent obesity. Asian Journal of Nursing Education and Research, 1(3), 82–84.

DeVille-Almond, J., Tahrani, A. A., Grant, J., Gray, M., Thomas, G. N., & Taheri, S. (2011). Awareness of obesity and diabetes: A survey of a subset of British male drivers. American Journal of Men's Health, 5(1), 30–37. https://doi.org/10.1177/1557988310366622.

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Guin, B., Bhatia, N., & Nitika. (2020). Prevalence and factors contributing to obesity among college girls. International Journal of Nursing Education and Research, 8(3), 314–320. https://doi.org/10.5958/2454-2660.2020.00070.7.

Hainer, V., Toplak, H., & Mitrakou, A. (2008). Treatment modalities of obesity: What fits whom? Diabetes Care, 31(2), 269–277. https://doi.org/10.2337/dc08-S273.

Helble, M., & Kris, F. (2017). The economic burden of obesity in Asia and the Pacific. Asian Development Bank Institute.

Jabade, M., & Moreshwar, S. (2014). A study to evaluate the effectiveness of planned teaching programme on obesity and its consequences among adolescents in selected private high schools. International Journal of Nursing Education and Research, 2(1), 43–49.

Jarali, A. B., & Radhakrishnan, G. (2013). Stress, obesity, and selected health problems among professionals. Asian Journal of Nursing Education and Research, 3(3), 154–163.

Jarali, A. B., & Radhakrishnan, G. (2013). Stress, obesity, and selected health problems among professionals. Asian Journal of Nursing Education and Research, 3(3), 154–163.

Kanchana, K. (2021). A descriptive study to assess the prevalence of obesity among women in an urban area of a selected city. Asian Journal of Nursing Education and Research, 11(3), 384–386. https://doi.org/10.5958/2349-2996.2021.00084.3.

Kruk, J. (2014). Physical activity and health. Mini-Review Physical Activity and Health, 1–15.

Mohammed, N. A., & Ahmed, H. S. (2019). The relationship between physical activity level and obesity among medical students at International University of Africa, Sudan. International Journal of Nursing Education and Research, 7(1), 17–22.

Orringer, K. A., Harrison, R. V., Nichani, S. S., Riley, M. A., Rothberg, A. E., Trudeau, L. E., & White, Y. (2018). Obesity prevention and management: Guidelines for clinical care ambulatory. Journal of Ambulatory Care Management, 41(1), 25–36. https://doi.org/10.1097/JAC.0000000000000239.

Paley, C. A., & Johnson, M. I. (2018). Abdominal obesity and metabolic syndrome: Exercise as medicine? BMC Sports Science, Medicine and Rehabilitation, 10(1), 1–8. https://doi.org/10.1186/s13102-018-0097-1.

Reshmi, B., & Sethu, G. (2015). A study on obesity among children. Research Journal of Pharmacy and Technology, 8(8), 1177–1178. https://doi.org/10.5958/0974-360X.2015.00211.2.

Romieu, I., & Dossus, L. (2016). Energy balance and obesity. World Cancer Research Fund International Working Group Report.

Shilpa, S., Naseeba, P. P., Princy, P., Manoj, G., Adheena, P., Yusra, K. V., & Kallada, A. B. (2021). Relationship between physical activity and obesity among female residents in a selected community. International Journal of Nursing Education and Research, 9(1), 45–53. https://doi.org/10.5958/2454-2660.2021.00010.9.

Suhaimi, Z., Musa, R. M., Suhaimi, Z., Abdullah, R., & Maliki, H. M. (2021). The effect of body mass index on health-related parameters in university students. Research Journal of Pharmacy and Technology, 14(6), 3271–3275. https://doi.org/10.52711/0974-360X.2021.00568.

Suresh, V., Patel, J. B., Kumari, S., Sonal, S., Shivangi, S., Hetal, S., & Sharma, S. (2016). Assess the effectiveness of structured health education programme regarding obesity among adults residing at Waghodia Taluka. International Journal of Advances in Nursing Management, 4(4), 372–375. https://doi.org/10.5958/2454-2652.2016.00084.0.