

Overweight and Obesity among Medical Students: Pokhara City in Western Nepal

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Abstract

Introduction: Obesity is on the rise. It is mainly associated with our lifestyle. Of the factors contributing to obesity stress seems to play important role as stressful situation leads to irregularity in diet, lack of exercise and addiction, each being considered independent factors leading to obesity. This study was carried out to determine the prevalence of obesity/overweight among the medical students at a medical college in Pokhara.

Methods: A cross-sectional study was done at Manipal Teaching Hospital in Pokhara from March to April 2024, with 200 third- and fourth-year medical students participating. Data was acquired using semi structured questionnaire and face to face interviews. Perceived stress scale (PSS) was used to determine the stress level. Anthropometric measurements were taken. The chi-square test and spearman correlation were used to examine the association between the variables.

Results: Almost half 81 (40.5%) of the students were overweight (42.6% male and 37.2% female). Of these, 23 (11.5%) were obese. In 169 (84.5%) students had high perceived stress level and was also found to be significantly associated with overweight and obesity. Other characteristics including exercise, forms of exercise, and time spent watching mobile phones every day, as well as habits like eating when not hungry and smoking, were found to be strongly associated with overweight and obesity.

Conclusions: Once thought to be a matter of pride but in the era of excessive consumerism it is increasingly becoming a risk factor for many human ailments. If not addressed promptly, it has the potential to bring irreversible harm to human health.

Key words: BMI; Obesity; Overweight; Perceived Stress Scale.



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INTRODUCTION

Is humanity eating itself into an early grave an opinion piece in a newspaper was so intriguing.[1] Despite advancements in science and medicine working to prolong our lives, our lifestyles offset their effects. In the past infectious diseases caused millions of premature deaths, now an obesity pandemic threatens to do the same.

Of the factors contributing to obesity, stress seems to be particularly important as stressful condition leads to irregularity in diet, lack of exercise and addiction, each being considered independent factors leading to obesity [2-4] And the medical education is stressful throughout the whole course of training. The amount of material to be absorbed, social isolation, pressure of examination, discrepancies between expectation and reality all can be anticipated to bring psychological stress.

The aim of this study is to see the prevalence of obesity and overweight among the medical students and also to make an attempt to find out the presence or absence of factors influencing body weight and to make them aware about the effect of obesity on their health.

METHODS

This cross-sectional study was conducted at the Manipal Teaching Hospital in Pokhara, which

is roughly 200 kilometers west of Kathmandu, the Nepali capital. The study was carried out from March 2024 to April 2024, a descriptive cross-sectional survey among third- and fourth-year medical students at Manipal Teaching Hospital, Pokhara. The study included all third- and fourth-year students who were available, willing to participate, and provided informed consent.

The sample size was estimated using the 53.0% [5] prevalence of obesity and overweight found in the study carried out in Tamil Nadu India. A sample size of 100 students was estimated to yield a prevalence estimate with a 5% error within 95% confidence levels. All the students who gave the informed consent were included in this study. A total of 200 medical students (122 male and 78 female) studying in Manipal College of Medical Sciences, Pokhara, were included in this study. Ethical clearance was taken from institutional review committee (Reference number ID 565).

Data was collected using semi structured questionnaire. Perceived stress scale (PSS) [6] was used to determine the stress level. Higher the score index, higher was the level of stress.

Weight of the students was measured to the nearest 0.1 kg using a digital scale (brand SKU, brand number: 100584238_NP-1020970944), and the height was measured to the nearest 1 cm using a measuring tape (Komelon model:

ergo 8m). It was requested to take off their shoes and stand with their heels touching. On top of the head, a flat wooden plank was positioned such that it was perpendicular to the measuring tape. The estimates from anthropometric measurements height and weight were used for the nutritional assessment. The BMI was classified as follows: underweight ($< 18.0 \text{ kg/m}^2$), normal ($18.0\text{--}22.9 \text{ kg/m}^2$), overweight ($23.0\text{--}24.9 \text{ kg/m}^2$), and obese ($> 25 \text{ kg/m}^2$). [7] Modified Kuppuswamy scale was used to classify students in Upper, Upper middle, Lower middle, Upper lower and Lower class.[8]

The questionnaire was prepared in English after a rigorous literature review, which was then translated into Nepali language and back-translated in English language. Students who participated in the study received verbal and written explanation of the procedure involved and the expected benefits from the study was informed to them. After getting informed consent, the pre-designed questionnaire was sent to subjects and explained that the results will only be expressed as a group data and confidentiality was maintained throughout and after the study.

Data was entered in Microsoft Excel, cleaned, coded and then exported to Statistical Package for Social Sciences (SPSS) version 21 for statistical analysis. For descriptive statistics,

categorical variables will be presented as frequency and percentage, whereas continuous variables will be presented as mean and standard deviation. Chi square test and spearmen correlation, where necessary, was used to determine the association between independent and dependent variables taking p-value less than 0.05 at 95% confidence interval.

RESULTS

Of the 200 participants, 61% were male and 39% were female, with 104 (52%) enrolled in VI and 96 (48%) in III MBSS. Mean age was 22.6 ± 1.29 years, ranging between 20 and 26 years of age. Majority of students were Hindus 186 (93%), followed by Buddhists, Muslims, and Christians. The 80 (40%) students were Brahmins, 28(14%) Chettri, 14 (7%) Newar, and 78 (39%) others. Very few students 7 (3.5%) lived in rented house with 186 (93%) living in Pucca house. More than fifty percent belonged to upper middle class of socio-economic strata (Table 1).

In this survey, 81 (40.5%) of the students were overweight, 52 (42.6%) men and 29 (37.2%) females. Among them, 23 (11.5%) were obese. Aside from the respondents' age, none of the criteria listed in Table 1 or other factors such as the number of siblings, religion, rented or lives in own house, types of houses and type of family were shown to be significantly associated with body weight.

Furthermore, the study found that 169 (84.5%) of the students had a high perceived stress level, which was also found to be significantly associated with overweight and obesity. Other factors like exercise, types of exercise (gym, walking, yoga and others), and time spent watching mobile phones every day, as well as habits like eating when you are not hungry and smoking, were also found to be significantly

associated with overweight and obesity (Table 2). In contrast, characteristics such as sleep length and diet type (vegetarian or non-vegetarian) and alcohol consumption were found to be statistically insignificant. This study also indicated that characteristics including smoking and types of exercise were significantly associated with high subjective stress levels.

Table 1: Distribution of overweight/obesity by socio-demographic characteristics (n=200)

Characteristics	Overweight/obesity		Total (n=200)	p-value
	Yes	No		
Gender				
Male	52(42.6)	70(56.2)	122	0.44
Female	29(37.2)	49(62.8)	78	
Semester	38(39.6)	59(60.4)	96	0.8
Sixth	43(41.3)	61(58.7)	104	
Ninth				
Socio-economic class				
Lower middle	1(25)	3(75)	4	0.5
Upper middle	42(37.8)	69(62.2)	111	
Upper	38(44.7)	47(55.3)	85	
Age of respondents/BMI ^a	Mean ±SD		200	0.041*
	22.6±1.29/21.7±3.09			

^a spearman correlation *Significant at 0.05 level, Numbers in parenthesis are percentage

Table 2: Distribution of overweight/obesity by perceived stress scale and other characteristics (n=200)

Characteristics	Overweight/obesity		Total (n=200)	p-value
	Yes	No		
Exercise				
No exercise	52(50)	52(50)	104	0.02*
Once a week	8(30.8)	18(69.2)	26	
Twice a week	14(35.9)	25(64.1)	39	
Daily	7(22.6)	24(77.4)	31	
Time spent on mobile/everyday				
30 minutes	2(66.7)	1(33.3)	3	0.00*
30 min to 1 hour	4(22.2)	14(77.8)	18	
1 to 2 hours	42(31.8)	90(68.2)	132	
>than 2 hours	33(70.2)	14(29.8)	47	
Do you eat even when you are not hungry?				
Yes	69(50.7)	67(49.3)	136	0.00*
No	12(18.8)	52(81.3)	64	
Smoking				
Yes	27(75.0)	9(25.0)	36	0.00*
No	54(32.9)	110(67.1)	164	
Perceived stress scale				
Low stress	0(0.0)	30(100.0)	30	0.00*
Moderate stress	11(16.7)	55(83.3)	66	
High perceived stress	70(67.3)	34(32.7)	104	

Numbers in parenthesis are percentage

DISCUSSION

Globally, the prevalence of overweight and obesity is rising. As per WHO, 43% of adults over 18 years are overweight and among them 16% are obese which is a 25% increase in the level from 1990. [9] The result of this study also corresponds with the estimates from the WHO, around 40% were overweight and 11% were obese. Other research figures include 18.6%/7.1% overweight/obesity among schoolchildren in Lalitpur [10], 9.7%/3% overweight/obesity among schoolchildren in Chitwan [11], 9.1%/7.8% overweight/obesity among schoolchildren in Pokhara [12], and 19.48% overweight among medical students in Kathmandu [13]. All of these studies' estimations were lower than this study's, which could be due to the difference in populations' socio-economic parameters under investigation.

In general, it is believed that rich people are more likely to be obese. In the study published in the Journal of Social Science and Medicine used data for 67 countries, looked at the relationship between socioeconomic status (SES) and obesity, what they found was quite intriguing. The obesity rate increased with a nation's socioeconomic development; it was likely to be high among the people with high SES in low-income countries. Conversely, in high-income countries, those with higher SES were less likely to be obese.[14] Whereas this

study didn't display any such connection between SES and obesity.

Direct comparisons in the context of Nepal are challenging due to the paucity of research in this field. The aforementioned Chitwan study may have captured this connection in general. Out of 111 students from the private school, 20 (18%) were obese. In contrast, the rate in the students from the public school was far lower, at 6 (3.9%) out of 155.[11] Further research in a larger sample size is needed to reflect the true connection in this regard.

Diet interventions trials have stipulated spontaneous weight loss after low fat diet. Additionally, it has also been reported that combining exercise to dietary reduction helps greater reduction in weight than diet restriction alone.[15] Findings of this study provided more evidence that nutrition and exercise have an impact on our body weight (table 2). Similarly, there is an increasing concern about the effect of digitalization on our health. It is well documented, through multiple studies, [16-18] that screen time behaviors, including smartphone use, is strongly associated with poor physical fitness and increased weight in the adult and children's populations. These associations have been noticed in this study too (Table 2).

Stress is another element that may be contributing significantly to the rise in obesity rates in the modern period. As stressful

situations can lead to irregularity in diet, which is called emotional eating, lack of exercise and addiction these factors can independently lead to overweight and obesity. [2-4] In the study carried out in Greece [19] in over 2000 university students. It was found that students with moderate or high perceived stress levels had double the prevalence of overweight/obesity compared to those with low stress. In another study done in India [20], in the medical students, perceived stress level has been found significantly associated with overweight/obesity in male students. Whereas, in this study the association between overweight/obesity with moderate to high level perceived stress level was statistically significant in both the gender. Indicating that both are on the rise in modern times.

The study's drawback is its small sample size, which cannot represent the overall population and may not have accurately reflected the correlation and association between the variables. There is no gold standard tool for certifying stress measurements. However, PSS have been used by other researchers as an index of stress and is now an accepted parameter for stress. Additional research is needed to establish the biological mechanism of stress.

CONCLUSIONS

Obesity is the outcome of an imbalance in calories consumed and calories burned. Our modern lifestyle may have contributed

significantly to the rise in overweight and obesity rates in the population. The study's findings, as well as those of numerous other relevant studies, indicate that many of the risk variables are tied to our habits. Being aware of this possibility and adapting our lifestyle accordingly may hold the key to preventing this looming danger from becoming a disaster.

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