MALNOURISHMENT AMONG MEDICAL STUDENTS OF PUNJAB IS UNDERWEIGHT STATUS A SIGNIFICANT ISSUE IN PAKISTAN?

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ABSTRACT

Objective: To assess the prevalence and factors which make a medical student of public sector medical college of Punjab, underweight.

Methods: A cross-sectional study was conducted at 12 different medical colleges of the public sector in Punjab. A total of 352 students from all five years of the academic course participated in this study. A pre-tested structured questionnaire was distributed to the students after taking their consent. The data included demographic information, targeted questions on diet, personal health habits, illnesses and family history.

Results: Out of the total population, 28.1% were male and 71.9% were female students. The median age was 21.0 years. The mean weight was 59.2 ± 11.54 kgs. 56.3% of the students were hostilities and 43.8% were day-scholars. The average pocket-money of the students was 10150 Rs. Per month. According to body-mass index, about 11.9% students were underweight, 12.8% were overweight, 2.3% were obese, and 62.5% were of normal weight. Students who were underweight did not take the recommended daily number of calories. Among the causative factors, a significant relation was also found between underweight status and mode of commute, hours of sleep, pocket money and whether the student takes nutritional supplements or not. Relation with various symptoms including fatigue, headache, breathlessness and insomnia was not significant.

Conclusion: An alarming number of Underweight students was present in the public sector medical colleges of Punjab, with the Underweight status being associated with a poor dietary status, unfavorable travel methods, and not taking nutritional supplements.

Key Words: Underweight, Malnutrition, Medical students, Pakistan, Cross sectional survey

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INTRODUCTION

Medical students in Pakistan go through five years of rigorous study to achieve basic qualification. This period of their lives is very hectic with regards to the syllabus covered, and maintenance of good physical and mental health is a challenge.[1-3] It is common knowledge that good physical health and mental health is tied to what we eat and drink and so Proper Nutrition plays a very important role in achieving this state of good physical health. It is a paradox that while medical students are expected to eat healthier because of their greater knowledge on this subject, they tend to ignore healthy diet in their day to day lives.[4] They also belong to the young-adult age demographic which is prone to eating unhealthy foods which focus more on satiety and less on actual nutritional value. This might put them at

risk for diseases such as obesity, type-2 diabetes and coronary heart disease.[5] Various parameters are used for assessment of nutritional status, in this study however we focus on whether the students of Medical Colleges of Punjab are Underweight or not, what percentage is underweight, and what factors influence this status. The underweight status is set to be a BMI below 18.5, as defined by NHS UK.

It is a common assumption that people with poor nutritional status will suffer related symptoms such as fatigue, breathlessness, insomnia, and headache etc. A discussion on the causative factors for this is necessary to prevent further aggravation and provide a suitable solution to this problem.

While a few studies have been done in Pakistan relating to this topic,[7-8] limited evidence is present and more in-depth research is required to make significant impacts.

METHODS

A cross-sectional study was conducted at medical colleges of public sector in Punjab. This was done through circulation of a specially designed, pre-tested structured questionnaire. This questionnaire consisted of 5 sections. The first section collected the demographic information of the participant. This included biodata as well as some specific questions which could point us towards some specific causes of their status of malnutrition. These questions included inquiry about their accommodation status, pocket money, and family income.

The second section consisted of targeted questions on diet of the participants. We determined the daily nutritional status by using a self-made diet chart, the dietary values used, were taken from Park's Textbook of Preventative and Social Medicine.9 The final caloric intake and caloric burn values were calculated and added to analytical software manually. The third section consisted of questions on personal health habits of the participants. This included questions about exercise, sleeping, and studying habits. The fourth section consisted of questions on various symptoms they might experience, and the fifth section dealt with family history.

After receiving permission from the ethics review committee of Ameer ud din Medical College, Lahore General Hospital, Lahore, the questionnaire was distributed in these Public Sector

Medical Colleges. All the participants were given Informed Consent as part of introduction of the questionnaire to allow for the usage of this data anonymously.

We distributed a total of 378 questionnaires among 17 different medical colleges, 12 out of these colleges responded and 352 questionnaires were filled and returned to us, so a total of 352 students participated in this study. Sample size was calculated using the formula sample size =Z2 * (p) * (1-p)/c 2, with confidence level of 95% and confidence interval set at 5. All the forms were reviewed and the data was manually entered into IBM SPSS v21.0 analyzed. All the participants were tested uniformly through all 5 sections of the questionnaire. Participants whose BMI fell in the underweight status were singled out and correlations of this status with presence of specific symptoms and predisposing factors was determined. Pearson's chi-squared test and Mann-Whitney U test was used to determine any significant relationship in these cases. A p-value of <0.05 was taken as significant.

RESULTS

Out of the total 378 questionnaires which were circulated, 352 were returned, from these 352, 315 were marked correctly in the space for height and weight and chosen as valid with a response rate of 83.3%. Of these, 28.1% were male and 71.9% were female. From the participants most were from 3rd year and 4th year followed by 1st and 2nd year and the least from 5th year. The median age of the participants was 21.0 years. The mean weight was 59.2 ± 11.54 kgs. The average pocket-money of the students was 10150 Rs. Per month. The average family income was 147927 Rs. Per month as shown in Table 1.

Table 1:

Total Participants (352)		
Gender	Male	99 (28.1%)
	Female	253 (71.9%)
Year of study	1st Year	69 (19.6%)
	2nd Year	60 (17%)
	3rd Year	99 (28.1%)
	4th Year	85 (24.1%)
	5th Year	39 (11.1%)
Accommodation status	Day-scholars	154 (43.7%)
	Hostilities	198 (56.3%)

Regarding the nutritional status, according to body-mass index, about 11.9% students were underweight, 12.8% were overweight, 2.3% were obese, and 62.5% were of normal weight. When considering the underweight participants of the study, 80.9% of them were female and 19.1% were male. 83.3% of them did not take the recommended number of calories daily. In depth analysis revealed that of the 45% of the total male participants and 28.96% of the female participants, had

a caloric intake less than the recommended daily no. of calories. There was also a significant relationship between Gender and having a Daily Caloric Intake less than the recommended daily no. of calories (p-value 0.03). 60% of the underweight participants were taking 3 meals per day. 92.8% of the participants were not on a specific diet plan. Regarding personal habits, 80.9% of the underweight participants did not sleep the recommended 7-8 hours per day. 64% of these participants were not taking any nutritional supplements. There was a fairly equal distribution of mode of commute between the participants. The majority of these participants (47.6%) studied about 1-2 hours per day. 59.5% were hostilities while the remaining 40.5% were day-scholars. Only 35% of these participants exercised daily. On checking the relationship between being underweight and presence of specific symptoms, 37 out of 42 (88%) of the participants had fatigue, 28 out of 42 (66%) had breathlessness, 34 out of 42 (81%) had headache, and 24 out of 42 (57%) had insomnia. The correlation between Underweight status and the various related factors was tested for significance. Daily caloric intake of less than the recommended number (Male=2400-3200; Female=1800-2400) also had a significant relation with underweight status (p-value 0.044). A significant relation was found between the Underweight status of the participants and the monthly pocket money they received (p-value 0.035). 64.2% of the underweight participants did not take any nutritional supplements and a significant relation was found (p-value 0.03). 54.7% of the underweight participants slept less than the recommended time for their age (7 hours) and a significant relation was found as well (p-value 0.049). Mode of commute also had a significant effect on Underweight status (p-value 0.048), as shown in Table 2**.**

Table 2:

Factors affecting Underweight Status.		Underweight		P-value
		Yes	No	
Does the subject take Nutritional Supplements?	Yes	14	51	0.03
	No	27	220	
Mode of Commute	Automotive	21	170	0.048
	Walking/Cycling	20	96	
Does the subject have daily Intake within the recommended range?	Yes	7	87	0.044
	No	35	185	
Hours of Study	Less than 2 hours	20	117	0.476
	More than 2 hours	20	149	
Hours of Sleep	Less than 7 Hours	23	172	0.292
	More than 7 hours	19	100	
Gender	Male	8	83	0.131
	Female	34	190	
Accommodation Status	Day-Scholar	17	117	0.771
	Hostelites	25	156	
Does the Subject take any specific diet?	Yes	3	46	0.104
	No	39	226	
Does the Subject Exercise Daily?	Yes	15	94	0.884
	No	27	178	
Year of Study	1st Year	12	45	0.116
	2nd Year	9	42	
	3rd Year	6	85	
	4th Year	10	70	
	5th Year	5	31	

Gender, accommodation status, hours of study, year of study, specific diet, and daily exercise also had no significant relation with underweight status. Class wise distribution of underweight students was not significant.

The relation between the underweight status of participants and various common symptoms

(Headache, Fatigue, Insomnia, Breathlessness) was also checked but it yielded no significant results as shown in Table 3.

Table 3:

Prevalence of symptoms		Underweight		P value
		Yes	No	
Fatigue	Yes	37	245	0.588
	No	5	25	
Breathlessness	Yes	28	159	0.262
	No	13	110	
Headache	Yes	34	221	0.772
	No	8	46	
Insomnia	Yes	24	176	0.373
	No	17	92	

DISCUSSION

The objective of this study was to observe and document the effect of various demographic, dietary, and personal factors on the underweight status of students of public sector medical colleges of Punjab. All these factors are a direct part of the daily life of these students, and hence their effect on them is very important. This is considering the fact these students go through a very busy period of five years where they experience mental stress of a tremendous level,[10] and a poor nutritional status is certain to compound this effect.[11] Therefore, it is of paramount importance to focus on the nutritional status and physical health of these participants.

In another study done in University of Gujarat in 2019, an alarming prevalence of underweight students (27.1%) was observed.[7] This is also in line with our observations that while medical students might possibly be more aware of the importance of a good and healthy diet, they fail to apply this knowledge and thus remain malnourished.

A 2018 study on eating habits of female students of a medical college of Lahore found that the eating habits of the students were found to affect the nutritional status. The students with poor eating habits were found to be anemic and malnourished.[12] This is in line with our findings that participants who did not take the daily recommended number of calories were underweight and hence malnourished (p-value 0.04). However, the same study also concluded that no significant association was established between socio-economic characteristics and nutritional status, [12] this was contrary to our observations as we found that the monthly pocket-money that the participants received had a significant relation with their underweight nutritional status (p-value 0.035). This gives an indication that medical students are directly affected by this particular socio-economic characteristic.

A 2011 study done on university students in Turkey showed a high number of students taking less no. of calories than the required daily allowance (RDA), specifically 78.4 of the men and 81.1% of the women,[13] but in our study, we found that 45% of the total male participants and 28.96% of the total female participants had daily intake less than the recommended daily no. of calories,[14] which reflects a different trend in Pakistan.

The above example is also strengthened further by the significant relation observed between underweight status and taking nutritional supplements (p-value 0.03). This shows the positive role that nutritional supplements can play in maintaining a good nutritional status for a medical student. There is a need to improve awareness in students about nutritional supplements. Although studies on the effect of nutrition on sleeping patterns has been done,[15] no conclusive studies were done to study effect of sleep on nutrition. In our observations, the effect of hours of sleep on underweight status was also significant (p-value 0.049) although this effect is very mild.

In a 2015 study among university students in Thailand,[16] it was observed that female students were more likely to be underweight than male students. In our study, even though an overwhelming majority of underweight participants (80.9%) was female (more than the sample average of 71% females sample population) the relation of gender with underweight status was not significant indicating that the effect of these various factors was not different among genders. While in other studies it was shown that hostilities are more likely to engage in health risk behaviors and have a relatively poorer nutritional status,[17,18] however in our observations difference in distribution of underweight students among hostilities and day-scholars was also not significant indicating accommodation status doesn't significantly affect the underweight status.

CONCLUSIONS

To conclude, poor nutritional status has been observed among the medical students of Punjab, as evident by the effects of the factors mentioned above. This is a worrying trend which may carry future repercussions for our health system. It is recommended that greater awareness be created in medical students regarding the improvement and maintenance of a good nutritional status. Application of these principles should also be stressed on as the forefront of any discussion regarding proper nutrition in medical students.

LIMITATIONS

There are certain limitations of this study as it is a cross-sectional study and hence is not able to give a definite incidence of underweight students in the country. A bigger sample size would be able to provide a more accurate of the prevalence of the underweight status as well as various factors which may be causative or be associated with it.

SOURCE OF FUNDING

This research was self-funded with no sponsorship by any outside organization.

CONFLICTS OF INTERESTS

There are no financial or personal conflicts of Interests.

ETHICAL APPROVAL

The study was approved by the Ethical Review Committee of Postgraduate Medical Institute / Ameer-ud-Din Medical College/Lahore General hospital, Lahore via Research No. 00-175-20 Dated: December 08, 2020.

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AUTHOR'S CONTRIBUTIONS

UA: Manuscript Writing, Data Analysis, Editing
AA: Data collection, Editing
AAM: Supervision, Proof reading