



MALNUTRITION AMONG MEDICAL STUDENTS IN NORTH KERALA

Veena Money*¹, Jesha M. M.², Sheela P. Haveri³, Sebastian N. M.⁴ and Arya S. Nath⁵

¹Junior Resident, Department of Community Medicine, MES Medical College, Perinthalmanna, Kerala, India.

²Assistant Professor, Department of Community Medicine, MES Medical College, Perinthalmanna, Kerala, India.

³Professor and Head, Department of Community Medicine, MES Medical College, Perinthalmanna, Kerala, India.

⁴Associate Professor, Department of Community Medicine, MES Medical College, Perinthalmanna, Kerala, India.

⁵Lecturer in Biostatistics, Department of Community Medicine, MES Medical College, Perinthalmanna, Kerala, India.

***Corresponding Author: Dr. Veena Money**

Junior Resident, Department of Community Medicine, MES Medical College, Perinthalmanna, Kerala, India.

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ABSTRACT

College students are highly vulnerable to malnourishment as during transition to independent living they make their own food choices, irregular routines, physical inactivity due to academic burden and lack of time. This leads to imbalanced diet. Studies conducted among medical students world over revealed the indifferent attitude towards lifestyle related diseases, healthy food habits and physical activity. **OBJECTIVE:** To assess nutritional status of medical students and the main associated factors. **METHOD:** A cross sectional study was conducted among MBBS students in MES Medical College, Perinthalmanna during February – March 2016. Those not willing to participate or taking drugs which may contribute to overweight/obesity were excluded. BMI was calculated and details like physical activity, junk food consumption and stress were assessed. **RESULTS:** Among 492 medical students, 63.2% were females and 36.8% males. **18.5%** were overweight; **2.64%** obese and **14.02%** underweight. All reported being stressed; 88.6% reported junk food consumption and 59.9% were physically inactive. A significant higher proportion of females were underweight and lower proportion were overweight/obesity. A significant association was noted between nutritional status and junk food consumption (9.26 times risk for overweight/obesity). But no significant association was noted between nutritional status and physical activity. **CONCLUSION:** One-fifth were overweight/obese and one seventh were underweight. Females were at risk for becoming underweight. Significant association was noted between nutritional status and junk food consumption but not physical activity.

KEYWORDS: Malnutrition, Obesity, Overweight, Underweight, BMI, Medical students.

INTRODUCTION

Under nutrition and micronutrient deficiencies continue to be major public health problems in India and over nutrition and obesity are emerging public health problems.^[1,2] It is a serious problem affecting young adults, adolescents and children. During adolescence teenagers start making individual choices and develop a personalized lifestyle. Especially college students are highly vulnerable as living away from home, transition to independent living, making own food choices, irregular routines and attraction to new lifestyle result in imbalanced diet.^[3] Another major factor is the physical inactivity for which the blame rests on academic burden and lack of time. The obese, do less well academically, have poorer job prospects and lower self-esteem.^[4] Many of these lifestyle choices are related to risk factors leading to a variety of disorders like obesity, hypertension, diabetes, ischemic heart disease, stroke, menstrual irregularities, etc^[5] thereby decreasing the quality of life as well as longevity.

Junk food refers to any food item such as soft drinks, chips, pizza, ice cream, hamburgers, porotta, cakes, fried food etc that have poor nutritional values and contains excess of sugars, fats, oil and salt.^[6] In an Egyptian study, eating during stress, snacking between meals and long time spent on computers were identified as the most important risk factors.^[7] According to a study by SCRIPPS Research Institute, junk food consumption alters brain activity similar to addictive drugs. A study by Tracee among young adults (18-30 years) revealed that eating fast foods had an adverse impact on body weight and insulin resistance.^[8]

According to WHO, physical activity is any bodily movement requiring energy and physical inactivity as less than 150 minutes of moderate intensity aerobic physical activity or 75 minutes of vigorous intensity physical activities done in a week.^[9] Physical inactivity has been identified as the 4th leading cause for global mortality and adequate physical activity reduces the risk

for diabetes, cardiovascular diseases, colon / breast cancer and hip / vertebral fractures.^[10]

Medical students are no different; they too due to their lifestyle with less physical activity and disordered eating habits are prone to obesity related health hazards. Studies conducted in various parts of the world among medical students, revealed the indifferent attitude towards lifestyle diseases, healthy food habits and physical activity.

The social implication of obesity is a major problem area that is often neglected. If they are overweight or obese they would carry a wrong impression onto the general population. Moreover as future health professionals, they should be able to practice what they are going to preach.

Body Mass Index has been widely used in adult populations aged above 18 years as an indicator of nutritional status. As per WHO, *Overweight* is when BMI equals to or more than 25; *Obesity* when BMI equal to or more than 30 and *Underweight* when BMI is less than 18.5.^[10]

Most of the lifestyle choices like unhealthy food habits, physical inactivity and psychological stress are modifiable. With this background present study was conducted to find out the nutritional status of medical students and the main factors contributing to this so as to give suggestions and make recommendations for them.

OBJECTIVES

- 1) To assess the nutritional status of medical students of MES Medical College, Perinthalmanna using Body Mass Index as indicator.
- 2) To study the associated risk factors like physical inactivity, junk food consumption and reported stress among these students.

MATERIALS AND METHODS

A cross sectional study was conducted among MBBS students belonging to 6 batches in MES Medical College, Perinthalmanna, Kerala during February – March 2016. All the medical students of MES Medical College admitted to MBBS during the academic years 2010 - 2015 were included in the study after taking informed consent and assurance of non-disclosure of identity. Those not willing to participate, those not available even after three attempts to contact them and those taking drugs like steroids or for any chronic illness which may contribute to overweight and obesity were excluded. Anthropometric measurements (height and weight) needed to calculate BMI were recorded. Height was measured with the foot wear removed, standing straight and looking forward, shoulder in a relaxed position using a stadiometer to the nearest 0.5cm. Weight was measured using a weighing scale with an accuracy of ± 100 gm. The weighing scale was calibrated at the beginning of every session. Participants were weighed in their light clothing after removal of foot wear and other personal

accessories; using the same weighing scale. Body mass index was calculated using the formula $\text{weight(kg)/height}^2(\text{m}^2)$. Using a semi-structured questionnaire, details like physical activity, junk food consumption and stress were collected as reported by the medical students.

Data was analysed using Epi info. Students were categorized as underweight, overweight and obese based on revised guidelines for BMI.^[8] Association between risk factors namely physical activity, junk food consumption and stress were looked for using Chi square test. Logistic regression was done to identify risk measures.

Ethical clearance was obtained from Institutional Ethics Committee and Institutional Scientific Committee.

RESULTS

A total of 492 medical students were included in the study. Of them, 63.2% were females and 36.8% were males. Based on BMI majority (64.84%) were in the normal range. About one fifth (21.14%) were overweight or obese [18.5 %- overweight; 2.64%-obese] while 14.02% were underweight as shown in Figure 1.

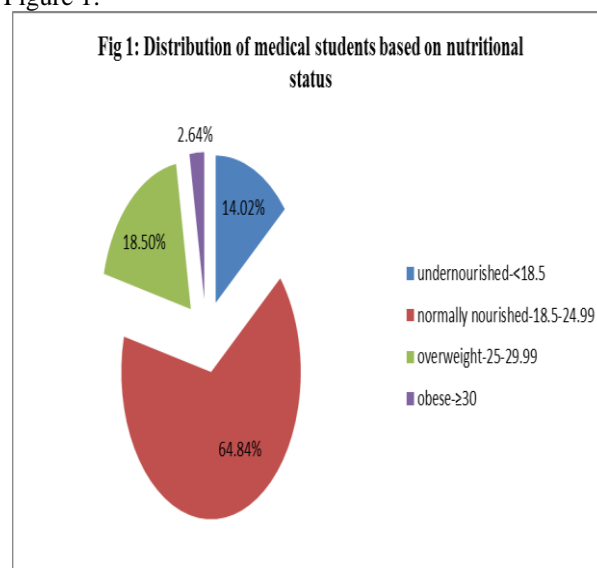


Figure 2 shows that only 7.9% male students were underweight when compared to 17.9% female students. And only 18.9% female students were overweight / obese when compared to 24.7% male students. This difference between genders was found to be significant (**chi square 10.78; p 0.013**). This could be explained by the fact that young female students especially college students are more conscious about their looks and body figure.

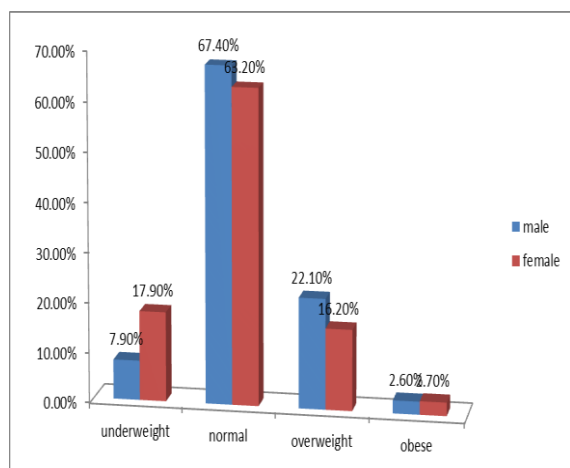


Figure 2: Gender wise distribution of nutritional status of medical students

Table.1 shows the distribution of major risk factors like physical inactivity, junk food consumption and stress among these students. All the participants reported they were stressed and more than three fourths (88.6%) reported junk food consumption. Physical inactivity was seen among more than half (59.9%) the participants.

A significant association was noted between nutritional status and junk food consumption (**Chi Square 15.401; p <0.001**) as shown in Table 2. But no significant association was noted between nutritional status and physical activity (Chi Square 1.506; p 0.498) [Table 2].

Table 1: Distribution of Risk Factors

| RISK FACTOR | Under weight (n=69) | Normal (n=319) | Overweight/ Obese (n=104) | Total (N=492) |
|---------------------|---------------------|----------------|---------------------------|---------------|
| Physical inactivity | 46 | 188 | 61 | 295 (59.9%) |
| Consumes Junk Food | 64 | 270 | 102 | 436 (88.6%) |
| Stress | 69 | 319 | 104 | 492 (100%) |

On regression analysis, (Table 2) junk food consumption was found to significantly increase the risk for overweight / obesity by 9.26 times (p 0.002). Junk food consumption was found to increase risk for becoming underweight by 2.3 times but non-significant (0.085) (Table 2). This may be due to the fact that increased junk food consumption decreases consumption of normal diet.

The slight increase in risk for overweight / obesity noted among the physically inactive was not found to be significant (Table 2). Physical inactivity was found to associated to underweight but not significant.

A 2.4 times more risk for becoming underweight can be noted (Table 2) among females (**p 0.005**). It can also be noted that females were protected from becoming overweight / obese but this was found to be non-significant (p 0.363).

Table 2: Risk factors associated with nutritional status

| Risk Factor | Nutritional Status | Chi square | Significance | Adjusted Odds Ratio | p value | Confidence Interval |
|-------------------------|------------------------|------------|--------------|---------------------|---------|---------------------|
| Physical inactivity | Normal | 1.506 | 0.498 | 1 | | |
| | Underweight | | | 0.718 | 0.235 | 0.415 -1.241 |
| | Overweight and obesity | | | 1.012 | 0.96 | 0.645 -1.586 |
| Junk food consumption | Normal | 15.401 | <0.001 | 1 | | |
| | Underweight | | | 2.323 | 0.085 | 0.89 -6.065 |
| | Overweight and obesity | | | 9.256 | 0.002 | 2.21 - 38.759 |
| Gender (male vs female) | Normal | 10.78 | 0.013 | 1 | | |
| | Underweight | | | 2.413 | 0.005 | 1.305 - 4.459 |
| | Overweight and obesity | | | 0.813 | 0.363 | 0.52 - 1.27 |

DISCUSSION

The proportion of overweight or obese in our study (21.14%) was similar to the study done among University Students from 22 countries (22%).^[11] Our finding (21.14%) is almost half of the finding seen in other studies done in Ujjain^[6] (44.9%), by M Deepa et al^[12] (45.9%) and by Thakkar et al^[13] (42.5%). In the

Egyptian study, half the medical students were overweight or obese.^[7]

The prevalence of overweight (18.5%) and obesity (2.64%) in our study, were similar to the studies conducted in West Bengal, India^[14] (17.5% overweight, 3.4%-obese); Delhi^[15] (11.7% overweight, 2% obesity)

and Malaysia^[16] (14.8%-overweight). The prevalence of overweight was almost similar in our study and Ujjain study (18%; 15.9%) but a wide disparity can be seen with respect to proportion of obese students (2.6% vs 29%).

The prevalence of underweight in our study (14.02%) was similar to the Malaysian study (14.8%).^[16]

Similar observation on gender difference with regards to proportion of underweight (7.9% male vs 17.9% female) was noted in the study done among University students from 22 countries (10.8%-males; 17.6%-females).^[11] With regards to overweight the gender difference (24.7% male students; 18.9% female students) noted here was similar to the findings from 22 countries (24.7%; 20.3%).^[11] The findings among female university students from Karachi (27.2% underweight and 21.3% overweight)^[17] were slightly higher than our findings (17.9% underweight and 18.9% overweight).

All the participants reported they were stressed in our study similar to the study conducted in Dammam, Saudi Arabia where 96.3% medical students had been stressed at one time or another and 48.6% reported being frequently stressed due to studies.^[18] In another Saudi Arabian study in Riyadh, the prevalence of stress was found to be 63%.^[19] In a study on chronic stress and suicidal thinking among medical students, Anna Rosiek et al found that only 6% reported feeling stressed that too rarely.^[20]

More than three fourths (88.6%) reported junk food consumption similar to the Ujjain study (94.2%).^[6] In the study done among medical students in Andhra Medical College, 77% reported junk food consumption more than twice a week.^[21]

Less than half (40.1%) the participants reported daily physical activity, similar to a study done among medical students in Andhra Medical College^[21] where 50% were engaged in daily physical activity. A low level of physical activity (30%) was observed among medicine students in Ziauddin University, Karachi.^[22] Whereas in a study done in Morocco, 83% practiced a favourable health activity^[23] and 95.6% in Ujjain study.^[6] In our study physical activity was found to be protective against obesity similar to finding in the Morocco study.^[23]

CONCLUSION & RECOMMENDATIONS

One-fifth of the medical students were either overweight or obese and one seventh were underweight. Significant association was noted between nutritional status and junk food consumption but not nutritional status and physical activity. Females were at risk for becoming underweight and were protected from becoming overweight / obese. Timely identification and correction of food habits and motivation for regular healthy physical activity is recommended to prevent lifestyle disorders. Medical students are victims of academic stress hence routine stress reduction services should be provided to them.

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