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# PREVALENCE AND ASSOCIATED FACTORS OF MALNUTRITIONAMONGMEDICALSTUDENTSININDIA

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***ABSTRACT***

***Malnutrition includes both over nutrition and under nutrition. Country like Indiaharbours burden of both types. College students are highly vulnerable to malnutrition as they seem tobe nonchalant about their dietary habits, physical activity and general health due to academic burdenand lack of time. With increasing importance given to physical appearance one group of students areinto diet, consumption of dietary pills and bulimia. On the other hand another set of students areaddictedto junk food andsedentarylife and end up in overnutrition. Our study aim is a) To estimate the prevalence of malnutrition among medical studentsb) To assessthefactorsassociated with malnutrition amongmedical students.Acrosssectionalstudy was done among undergraduate medical students. Asemi-structuredquestionnairewasself-administeredamong200studentsandalsoanthropometricexaminationwasconducted andBMI wascalculatedwiththe quetlet's equation(weightinkgdivided by height in $m^2$ ) The dietary habits and intensity and frequency of physical activity werequestioned.Thedatawasentered in an Excel sheet and theresults weretabulated.According to the WHO BMI scale , 13 students were underweight , 113 were healthy ,55 were overweight and 19 were obese . Obese and Overweight students were found to be morelethargicand had worsedietaryhabits than thehealthystudents.Obesity and overweight is quite common among medical students . Awarenessabout the ill effects of malnutrition has to be provided and medical students should be encouraged totake care of their health so that they can adapt to a healthy lifestyle and also practice the education ofhealthpromotion amongtheirpatients in future.***

***KEYWORDS:Nutrition, BMI,Obese ,Food habits,Weight***

## INTRODUCTION

Nutrition is necessary to ensure state of good health for an individual. A balanced diet includesadequate yet not excess amount of calories , proteins, fats, vitamins and minerals . Malnutritionincludes both over nutrition and under nutrition. Country like India harbours burden of both types ofmalnutrition at a high prevalence. It is of utmost importance to ensure that everybody

maintains theirBMIintherangeof18.5–25,whichisconsiderednormalaccordingtoWHOstandards.Overweightisassociatedwithincreasedmorbidityandmortality.Theriskofmorbidityfromcoronary heartdiseaseandatherosclerosisisincreasedamongmenandwomenwhohadbeenoverweight in adolescence[1] .Weight loss in overweight people is difficult to sustain and may lead toweightcycling[2] .Itisthusimportanttomaintainaconstantandnormalweightforaperson'scorrespondingheight .College students are highly vulnerable to malnutrition as they seem to be nonchalant about theirdietary habits, physical activity and general health due to academic burden and lack of time. Withincreasing importance given to physical appearance one group of students are into diet, consumptionof dietary pills and bulimia. On the other hand another set of students are addicted to junk food andsedentary life and end up in over nutrition. Obesity and overweight is increasing nowadays amongmedicalstudents.

Obesity is a preventable problem. It can be prevented by following a balanced diet, intense andconsistentphysicalactivity.Worldwide,theintakeoffattyfoodsandhigh-caloriefoodshaveincreased drastically which has brought the topic of obesity and it's health effects to limelight. It isbeing viewed as a serious issue as it has become very common and is a risk factor for a lot of healthdisorders.Obesity has also become prevalent among medical students. An observation by the Indian MedicalAssociation's (IMA) Pune chapter says that anIndian doctor's average lifespan is 55-59years,almost 10 years lesser than that of the general population[3]. Medical students have very little time totake care of themselves. The academic burden imposed on them, staying away from home in hostelsand the change in lifestyle trends takes a toll on their healthy living. Medical students are the doctorsof tomorrow, they are the care takers of the future. So, it is imminent that they allot enough time andenergy to make sure they are healthy and can efficiently care for their patients. Hence this study wasconductedamongthe medicalstudents inanurbanarea. Our aim is to estimatethe prevalenceofmalnutrition amongmedicalstudents and toassess thefactorsassociated with malnutrition amongmedical students.

**METHODOLOGY:**

A cross sectional study was conducted,among undergraduate medicalstudentsinamedicalcollegelocatedat Pondicherry.Inthestipulatedstudyperiodthedatawascollectedusingasemi-structuredquestionnaire by self-administration method among 200 medical students, by adopting convenientsamplingmethod.Informedconsentwastaken.Alongwiththequestionnaireadministration,anthropometric measurements (Weight, Height) were also done among all the participants by usingsame weighing machine and height stand. The height and weight of the students were used tocalculatetheBMIaccordingtotheQuetlet'sequation(weightinkgdividedbyheightinm$^2$).The students were grouped into four groups according to the BMI (WHO Standards) as underweight (lessthan 18.5 ) , normal (18.5 – 24.9 ) , overweight ( 25 – 29.9 ) and obese ( more than 30 ). The studentswere questioned about their dietary habits, their physical activity , their ability to concentrate andtheir energy levels. The data was entered in an Excel sheet and the analysis performed. Results werepresented in tables and figures form. The study has received the ethical committee approval from theInstitutionalEthical Committee

**RESULTS:**

Total number of medical students who participated was 200, out of which 115 were females and 85were males. Among these students 27.5% were found to be overweight and 9.5% were found to beobese. Out of the obese students, 68% were found to be males and the rest 32% were females.

13students were found to be underweight. Table 1 depicts that more females have a normal BMI whencomparedto their male counterpartsandaclearmajorityof theobesestudents weremales.

The phytochemicals in fruits and vegetables have been found to act as anti-obesity agents becausethey may play a role in suppressing growth of adipose tissue. Figure 1 shows that 47.5% of thestudents do not consume fruits and vegetables as adequately as required. Figure 2 shows that theconsumption of unhealthy foods was harmfully high. The consumption of chocolates was found to bemostfrequent, followedbyfried foods, icecreams, sweets and aerated drinks.

The pie chart (Figure 3) shows the commonly skipped meals by the medical students. 47% eatregularly and do not skip any meals, 46% skip breakfast, 2% skip lunch and the rest 6% skip dinner.Breakfast, the supposedly most important meal of the day, the meal which gives us the energy tocarry on with the important activities of the day, is the most commonly skipped meal by the students.Thisisprobablyattributedtothefactthatthestudentsdon't haveenoughtimetoeattheirbreakfastas theyarein a hurrytoget to the morningclasses.

Figure 4 shows the physical activity done by the medical students divided into 4 groups according totheBMI.Physicalactivity isanimportanttooltohelpreduceandmaintaintheweightofanindividual and it also has long term effects on the mental well-being of people. In this study, 49% ofthe overweight students were found to have less than required physical activity per week. 36% of theobese students, 45% of healthy students and 30% of the underweight students don't practice physicalactivity as frequently as is ideal.20% of the students do not engage in physical activity at all, while58% engage in moderate intensity of workout and only 22% engage in vigorous workout. Table-2shows that lethargy is quite common among medical students as such , but it is a more severeproblem amongtheobesepopulation.

**Table-1:Gender-wisedistributionof BodyMassIndex(BMI)amongmedicalstudents(n=200)**

| SEX | UNDERWEIGHT | NORMAL | OVERWEIGHT | OBESE |
|---|---|---|---|---|
| MALE | **6 (46%)** | **38 (33%)** | **28 (51%)** | **13 (68 %)** |
| FEMALE | **7 (54%)** | **77 (67%)** | **27 (49%)** | **6 (32%)** |
| TOTAL | **13 (6.5%)** | **115 (57.5%)** | **55 (27.5%)** | **19 (9.5%)** |

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**Figure1:Frequencyofconsumptionofvegetablesandfruitsamong medicalstudents**

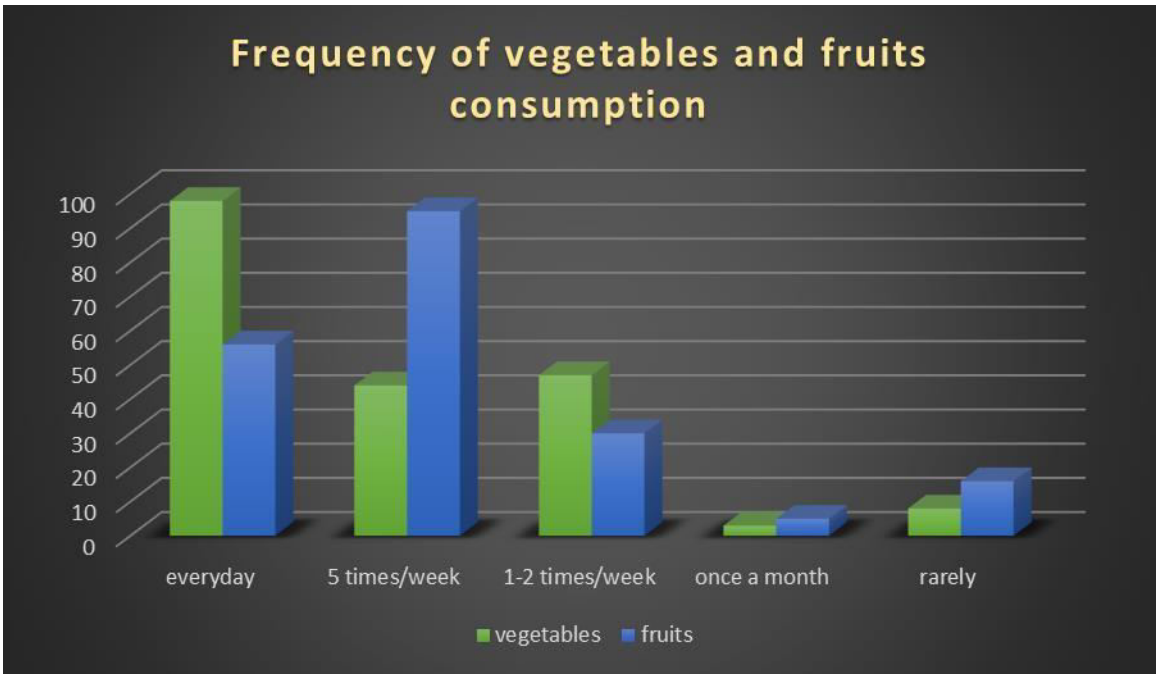


**Figure2:Frequencyofconsumptionofunhealthyfoodamongmedical students**

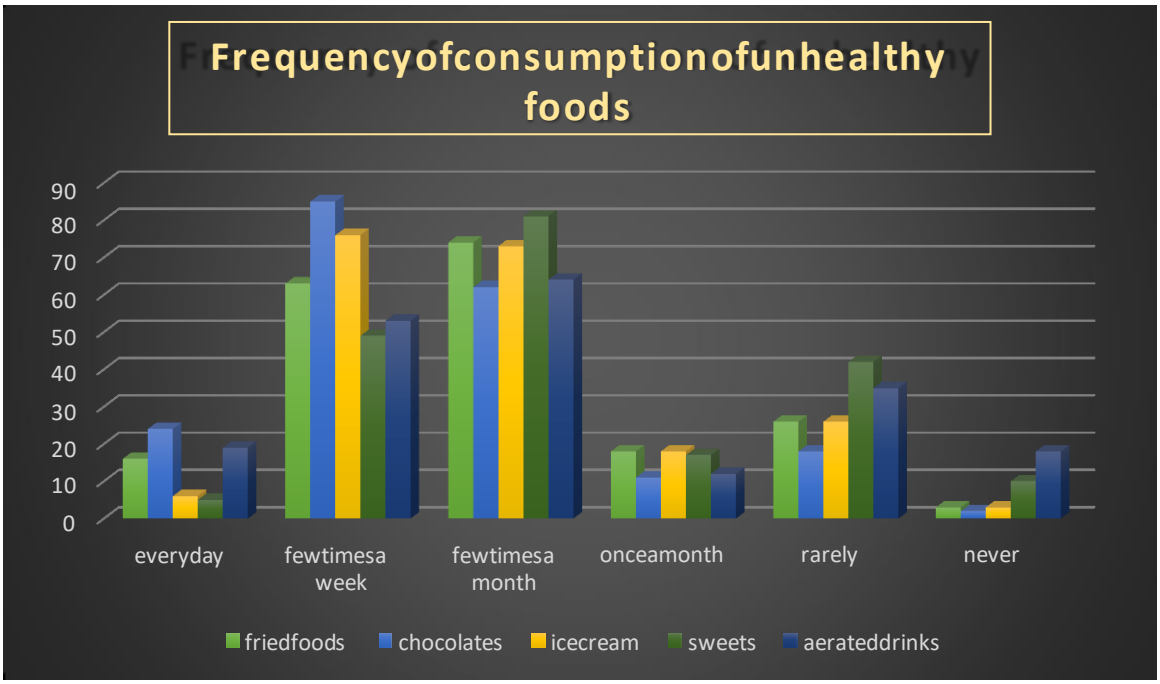

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**Figure3:Mealskippingfrequency among medicalstudents**

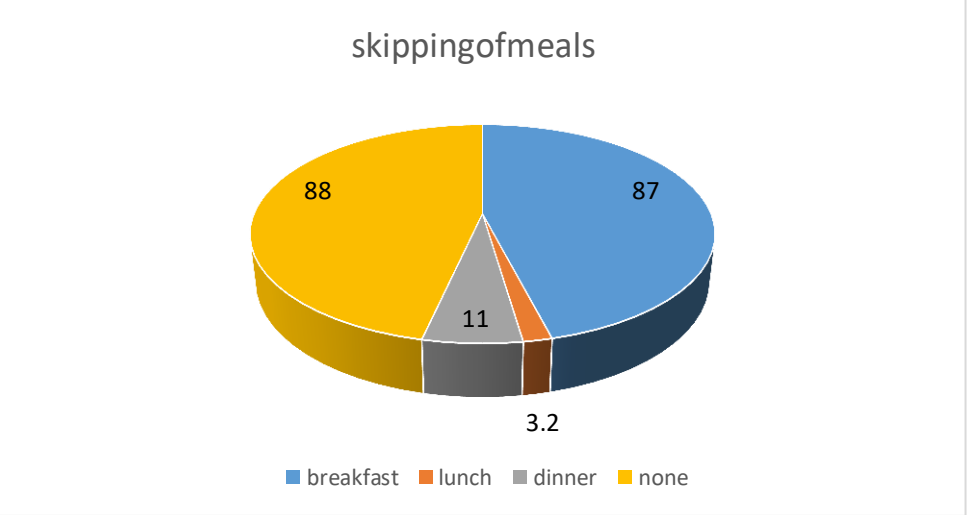


**Figure4:Frequencyofphysicalactivityamong medicalstudents**

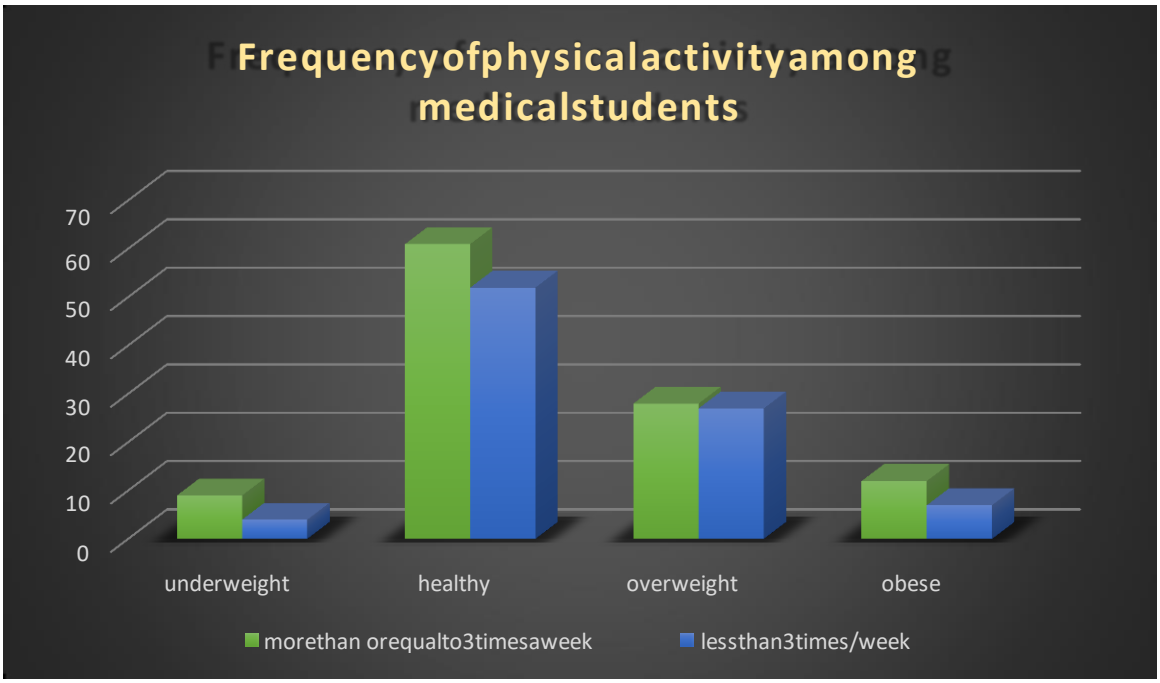

**Table-2:FrequencyOf LethargyAmongNormalAndObeseStudents**

| | NEVER | RARELY | SOMETIMES | OFTEN |
|---|---|---|---|---|
| NORMAL | 4% | 22% | 50% | 25% |
| OBESE | 0 | 16% | 47% | 37% |

## DISCUSSION

In the present study ,according to the WHO-BMI scale , 57.5% were in the normal BMI range out ofwhich 67% of the healthy students were females and the rest 33% were males . The underweightproportion of the students was 6.5%, out of which 54% were females.This is similar to other studiesconducted in Kerala, Kanchipuram and Romania.[5,6,7,8] In the present study, 9.5% that is , 19 out of200 students were obese . Out of these obese students, 68% were males and only 32% were females.This is similar to other studies which also showed that the majority of obese people in a samplepopulationaremales. Obesityis morecommon amongmalesascomparedtofemales.

Thisstudyfoundthatmajorityofthestudentsdidnotconsumehealthyfoodslikefruitsandvegetables. The consumption of fruits and vegetables are generally below the required level whereasthe intake of fattening , unhealthy foods like fried stuff, chocolates, ice creams, cakes , sweets andaerated drinks is high enough to cause severe adverse effects. This was comparable to a study doneamong medicalstudentsinKarachiwhere theconsumptionofjunkfoodswassimilarly high[9].Though more than half of the students eat 3 meals regularly, breakfast is the most commonly skippedmealwhich is in accordanceto thegeneral trend rightnow.

Physical activity reduces the risk of premature mortality in general, and of coronary heart disease,hypertension and diabetes mellitus in particular. Physical activity also improves mental health and isimportant for the health of muscles, bones and joints[10.] In this study, 49% of the overweight studentswere found to have less than required physical activity per week. 36% of the obese students, 45% ofhealthy students and 30% of the underweight students don't practice physical activityas frequentlyas ideal. In a study by Gutin B et al. those adolescents who involved in intense physical activity wereleanandhealthy.[11]Theoverweightandobesestudentswerefound tobe more lethargic whencomparedto their healthiercounterparts.

## CONCLUSION

The prevalence of malnutrition was found to be 43.5% . Out of these , underweight population was6.5%, overweight was 27.5%andobesewas 9.5%.A significant finding was that the majority of the students in the normal BMI range were females(67%) while only 33% were males. The predominantly obese students were found to be males. Theconsumptionofvegetablesandfruitswerenotasfrequentasrequired, intakeof junkfoods werehigh, the physical activity was found to be inadequate among many students, a majority of students werefound to skip breakfast . All these could potentially harm the physical and mental well-being of thestudents. The obese students were also found to be more lethargic when compared to the normalstudents .

Medical college is the time when the students have to be very active physically andmentally. It is a phase where there is massive pressure on the students to do well, and to perform wellsufficientenergyisofimpendingimportance.Awarenessabouttheilleffectsofobesityandunderweight and has to be spread and the students should be encouraged to take care of themselvesproperlyand notgive into thetime constraintandthephysical ,mental stressimpingingonthem.

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