

## Dietary pattern amongst Medical college students, Delhi

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### ABSTRACT

**Background:** India is experiencing a transitional shift with more of new cases of Non Communicable Disease observed specially in young adults. One of the major reasons of this upsurge is faulty dietary habits, resulting in overweight and obesity and further rise in NCDs. The purpose of this study is to assess eating habits and nutritional risk factors for NCDs in a medical student of Medical college of Delhi.

**Methods:** After explaining the purpose of the study in individual classroom explained questionnaire was mailed to all 300 medical college undergraduate students currently studying in this medical college. The form consists of questions on sociodemographic details including information about weights, height and eating habits including, drinking and smoking habits.

**Results:** Filled forms were returned by 220 students out of which 204 were found to be complete and were considered for further analysis. Of total 204 students, 72 (35.3%) were females and 132 (64.7%) were males in our study. Regarding meals only **154 (75.5%)** were found to be taking meals regularly i.e. **more than 3 times** a day and **82.4% (168)** were having breakfast on regularly basis. Daily consumption of vegetable and legumes against recommended two times were found only in 41.2 (84) students, similarly daily fruit consumption against recommended two times was found only in 30.4% (62) students only. However fast-food consumption on daily basis was as high as 23.5% (48).Smoking was absent in students and alcohol intake was present in 3% of males (06) and reportedly absent in females. About **22.5% (46)** was reported of doing some sort of exercise in a week but only **20 (9.8 %)** were found to be doing exercise on daily basis. 156 (76.5%) sought some sort of information regarding balanced diet and 120 (58.8%) had reported to have adequate information about balance diet.

**Conclusion:** Eating habits were found to be irregular among undergraduate medical students with regard to meals and daily intake of fruits and vegetables was found to be less than recommended norms. More efforts are required for improving eating practices of the students and also for adequate nutrition and its implication on health.

**Key words:** Eating Practices–MBBS students–Balanced diet–Junk food–Regular meals–Non communicable diseases

### 1 INTRODUCTION

One of the important factors that help us remain active and healthy is good nutrition which consists of adequate amount of fruits, vegetables and nuts plus intake of cereals, pulse, oils and sweeteners in recommended range. Anything beyond it or in excess falls into the category of unhealthy diets which is one of the major risk factors for a range of chronic diseases, including cardiovascular diseases, cancer, diabetes

and other conditions which are linked to obesity per say. Since number of person suffering from Non –communicable diseases (NCDs) are increasing drastically World Health Organization (WHO) has given specific recommendations for a healthy diet which include: eating more fruit, vegetables, legumes, nuts and grains; cutting down on salt, sugar and fats to curb down risk factors for developing NCDs. It is also advisable to choose unsaturated fats, instead of saturated fats and towards the elimination of trans-fatty acids.<sup>1</sup>

Approximately 16.0 million (1.0%) Disability Adjusted Life Years (DALYs), a measure of the potential life lost due to premature mortality and the years of productive life lost

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due to disability) and 1.7 million (2.8%) of deaths worldwide are attributable to low fruit and vegetable consumption<sup>2</sup>. These unhealthy eating practices or unhealthy dietary habits are one of the important risk factors that can be controlled with active intervention and health nutrition. It has been said that dietary habits determine our health status by 25 to 30%<sup>3</sup>.

Consuming a healthy diet throughout the life-course helps to prevent malnutrition in all its forms as well as a range of noncommunicable diseases (NCDs) and conditions. **Nearly 61% of deaths in India are now attributed to non-communicable diseases**, including heart disorders, cancer and diabetes, according to a WHO report and almost 23% are at the risk of premature death due to such diseases<sup>4</sup>.

Dietary pattern (DP) is the general profile of food and nutrient consumption which is characterized on the basis of the usual eating habits. The analysis of dietary patterns gives a more comprehensive impression of the food consumption habits within a population. Many such unhealthy eating practices are reported in young adults such as meal skipping, eating away from home, snacking and fast food consumption<sup>5-8</sup>.

The general perception that the medical college students, being future doctors have better knowledge about food and nutrition and eat otherwise healthy compared to their counterpart i.e. non medicos students but in some studies it has rather opposite is found to be true<sup>7-9</sup>. With the growing number of attractive advertisements and increase in market of fast foods and snacks, knowledge about the healthy diet may acts to control these ever rising trends. Universities students and young people are the right person to spread this knowledge since they are the one affected most and for long time. Also in many studies depression is linked with unhealthy eating pattern or vice versa<sup>9-10</sup>.

**Also stress in medical students life and study load would be factors that negatively influence their diet.** Medical college students after intensive training in their respective fields, have to treat patients on their own. Nutrition is an important part of any disease management and further prevention of the diseases. If they themselves don't have the knowledge of healthy eating pattern, they will be under-trained in one of the important component of patients care. The medical studies per say are found to be associated with stress and infrequent sleep patterns which make them prone to develop further mental health related issuers. Hence it is important to keep a track on their diet and also emphasis on healthy nutrition importance. Keeping the above knowledge in mind a study was planned with the objective, to assess Eating habits and nutritional risk factors for NCDs in a Medical College of Delhi.

## 2 MATERIAL AND METHODS

A cross sectional, exploratory study was done with the aim to assess the eating practices of the university MBBS students. The present study was conducted from July to

September 2018. For the study sample included all 300 MBBS students from a government medical college located in north-west part of Delhi. The purpose of the study was explained to all the students. It was also explained that the information provided will be kept confidential. All the students who gave their consent were included in the study. Those students who either didn't consented or those having some serious disorder were excluded from the study, considering the facts that their eating practices would have modified according to the medication and disease.

A pre designed, pre-tested validated semi-structured interview schedule was prepared on the basis of literature review of the similar studies and was used to capture sociodemographic details and eating practices including smoking, alcohol intake and exercise habits.

Data was compiled in an Excel worksheet, Statistical Package for Social Sciences (IBM Inc.) version 16. Quantitative data was expressed in percentages and quality was expressed in proportions and Chi square test was used to test the association between categorical variables. P Value less than 0.05 were considered statistically significant.

## 3 RESULTS

A total of 300 forms were filled, 220 forms were received, out of which 204 were found to be complete and were considered for further analysis. Out of 204 students males were 64.7 % were males and 35.5 % were females. Most of the study subjects (82.4%) were between 18-20 years age group with mean age recorded was  $19.65 \pm 1.8$  years. Majority (42.2%) falling in upper middle socioeconomic status by modified Kuppaswamy scale CPI 2017. On considering the educational status of parents, both mother (70.6%) and father (87.3%) education status were more than 12<sup>th</sup> class for majority of the students. Also more than two-third of the mothers of study subjects were homemaker (72.1%) and for fathers, more than two-third were business owner and self-employed as shown in **Table 1**.

**Eating practices among the students population**, maximum were having **regular meals (85.3%)** but on asking whether they are taking minimum three meals daily, the percentage decreased to **75.5%**. However if we just compare daily three meals intake, it has been found more in male students (61%) as compared to female students (39%) and the results were found to be statistically significant (P-Value=0.04). Majority (82.4%) of the students were having breakfast daily. Alarmingly 14.7% of students were taking vegetables and legumes occasionally and only 41.2% were taking them for more than two times a day as required for a balanced diet which was found to be statistically significant (P-Value=0.03). Almost fifty percent (55.8%) of the students were taking one fruit minimum in a day but overall consumption is more in males (64.2%) as compared to female (35.8%) with significant difference (P-Value=0.001) found in between the two group intake of fruits. Similarly overall fried food consumption was found to be more in males (61.7%) as compared to female (38.3%) with at

least one time of day they were found to be consuming fried food. Almost one-fourth (23.5%) of the study population were found to be consuming fast food daily or more than one times a day and daily more than 2 L water intake was found to be in 62.7% of the study population as shown in **Table 2**.

Smoking among the study subjects were found to be just 1.5% and alcohol intake 3% but since it was self-filled form, the data seems to be biased. However, one third (32.3%) of the study population were reported to exercise regularly i.e. more than 5 days a week (Not shown in table). The result were found to be statistically significant (P-Value=0.022). Also on asking whether they understand the concept of balance diet, more than fifty present

(58.5%) of people said they have adequate information regarding balance diet (statistically significant, P-Value=0.003) and 76.5% (156) of the students said they actively seek information regarding balance diet (Not shown in table). The eating habits in study population are associated with many factors as shown in **Figure-1**. Apart from being hungry which should be associated with eating, students were found to have something or eat when they were feeling bored (24.5%) followed by feeling happy (19.6%\*), nervous (18.1%), out of control feeling after sight of food (15.1%\*) and Feeling lonely (9.8%).

A total of 300 forms were mailed, 220 forms were received, out of which 204 were found to be complete and were considered for further analysis.

#### 4 DISCUSSION

The study deals with the eating practices observed amongst medical college students and also their eating behaviors. Due to long teaching hours, lack of sleep and performance anxiety adversely affects the eating habits of the students. Although acquiring this eating habits are temporary in students life but often these habits gets inculcated in their eating habits and becomes part of their life style leading them to vulnerable to develop the disease in future.

In our study 85.3% were found to be taking meals regularly and 75.5% were found to be taking meals more than three times a day. Result were found to be similar to a study done in China by Sakamani R et al. in which in which 83.6% of university students consumed regular meals, with 79% of them took at least three times per day<sup>11</sup> In another study done in Lebanon university, regular meals intake was found to be 61.4%<sup>12</sup>. Veena et al. in her study pointed out that the intake of three meals per day were almost 70%<sup>13</sup>. Similar results were reported in another study done by Al-Haj MEA et al. among Sudanese medical college students<sup>14</sup>.

Almost one fifth (17.6%) of the study population was found to be skipping breakfast on daily basis which is not a good thing since skipping of breakfast in many studies<sup>15-16,8</sup> have found to be associated with poor performance, poor glycemic levels, difficulty in attending lectures with short attention span and irritability because of lack of energy. Also Skipping meals were found to be more in young

adults as compared to other age group<sup>17</sup>. It had also been hypothesized that skipping of breakfast leads to increase in uptake of fast food or food with empty calories results in nutrient deficiency and poor nutritional status which can leads to premature deaths among adult because of various metabolic disorders. Hence it is recommended to avoid them as much as possible<sup>18</sup>. According to Raaijmakers LG et al., 2009 skipping breakfast was noted in 10-30% of the population in US and Europe region<sup>19</sup>. In another study done in Turkey by Yilmaz et al<sup>20-21</sup> skipping breakfast was as high as 35%. In our study, approximately 30.5 % of the students were consuming Fast food on the daily basis or at times more than two times. These students are higher risk of acquiring such disorders.

In a study done by Savage GS, 2007<sup>5</sup> meals skipping (especially breakfast) are one of the common unhealthy eating patterns among young adults apart from eating outside, snacking and fast food consumption. Consumption of fruit and vegetables were found to be lacking then the recommended standard with only 43.1% students were found to be taking fruits at least one time a day and 12.7% were taking the recommended more than two times a day. The results are comparable to a study done in China by Ruka Sakamaki et al., 2006, they reported 32.5% of the fruit consumption daily with more in female students however we didn't found any gender difference in fruits consumption habits<sup>22</sup>. And if we talk about vegetables intake only 41.2% were taking vegetables at least two time a day (Recommended) which is very alarming similar to one Behrain study<sup>7</sup> and Malaysia study<sup>23</sup>. Also it has been pointed out that the frequent consumption of snacks and fast food as meals is a recognizable aspect of teenage food Behaviour. The respondents in our study reported to consume minimum one time fast food were 18.6% and almost 5% were reported to consume more than two times in daily basis. This, too, was an alarming data as only half of the respondents were indicated as having a good nutritional status. Thus, the university may help these students by planning and implementation of intervention programs, such as health campaigns and healthy lifestyle promotions. This is comparable to many other studies<sup>24,21,7</sup> Though in our study we have not calculated association of obesity and fast food still we found that many students were taking fast food and replacing them at times with regular meals. The fast food consumption pattern tells about the risk factors they are developing about obesity and further associated with chronic diseases since in many studies<sup>25</sup> fast food consumption is linked with obesity and development of other non-communicable diseases.

This time period requires active intervention since though the Behaviour adopted in college life are temporary, it sometimes got carried away in adult life also with continuation of the same eating practices and habits which in their later life can lead to development of risk factors and various NCDs. University students had frequent snacking habits<sup>26</sup> and had a higher frequency of fast food consumption. They often select fast food due to its palatability, availability and convenience<sup>12</sup>.

Lack of physical activity and too many sitting hours also put the subjects in developing risk factors category. In

Table 1. Sociodemographic characteristic of study subjects

Variables	Male (%)	Female (%)	Total (%)*
Age (in completed years)			
18-20	108 (64.3)	60 (35.7)	168 (82.4)
21-23	24 (66.7)	12 (33.3)	36 (17.6)
Socioeconomic status			
Upper	34 (63)	20 (37)	54 (26.5)
Upper Middle	52 (60.5)	34 (39.5)	86 (42.2)
#Lower Middle	46 (71.8)	18 (28.2)	64 (31.4)
Mother's Education			
<than 8th class	18 (75)	06 (25)	24 (11.8)
8-12th class	30 (83.3)	06 (16.7)	36 (17.6)
>12th class	84 (58.3)	60 (41.7)	144 (70.6)
Father's Education			
<than 8th class	04 (100)	00 (00)	04 (0.2)
8-12th class	08 (36.4)	14 (63.6)	22 (10.8)
>12th class	120 (67.4)	58 (19.4)	178 (87.3)
Mother's occupation			
Govt. job	18 (45)	22 (55)	40 (19.6)
Pvt job	02 (50)	02 (50)	04 (2.0)
Homemaker	112 (70.0)	48 (30.0)	160 (78.4)
Father's occupation			
Govt. job	70 (63.6)	40 (36.4)	110 (53.9)
Pvt job	16 (57.1)	12 (42.9)	28 (13.7)
Business owner	46 (69.7)	20 (30.3)	66 (72.1)
Total	132 (64.7)	72 (35.3)	204 (100)

\*Column total

#Lower Middle and Upper Lower rows are combined together for calculation Purpose (Modified Kuppaswamy Scale)

Table 2. Eating practices amongst the study population

Gender	Male (%)	Female (%)	Total (%)
Disease related Factors			
Regular	114 (65.5)	60 (34.5)	174 (85.3)
Meals	18 (60)	12 (40)	201 (14.7)
*Frequency	38 (76)	12 (24)	50 (24.5)
of More than 3 times	94 (61)	60 (39)	154 (75.5)
Daily	106 (63.1)	62 (36.9)	168 (82.4)
Daily	26 (72.2)	10 (27.8)	36 (17.6)
fruits and vegetables onally	26 (86.7)	04 (13.3)	30 (14.7)
and One time	52 (59.1)	36 (40.9)	88 (43.1)
legumes	52 (61.9)	32 (38.1)	84 (41.2)
*Frequency	10 (71.4)	04 (28.6)	14 (6.9)
sump	62 (81.6)	14 (18.4)	76 (37.3)
sump	46 (52.3)	42 (47.7)	88 (43.1)
tion More than two times	14 (53.8)	12 (46.2)	26 (12.7)
Fried	06 (100)	00 (00)	06 (2.9)
food Occasionally	84 (61.8)	52 (38.2)	136 (66.7)
con- One time	34 (65.4)	18 (34.6)	52 (25.5)
sump	08 (80)	02 (20)	10 (4.9)
Daily	08 (66.7)	04 (33.3)	12 (5.9)
con- Occasionally	92 (63.9)	52 (36.1)	144 (70.6)
sump	26 (68.4)	12 (31.6)	38 (18.6)
tion More than two times	06 (60)	04 (40)	10 (4.9)
*Daily	38 (50)	38 (50)	76 (37.3)
of- More than 2L	94 (73.4)	34 (26.6)	128 (62.7)
fast	132 (64.7)	72 (35.3)	204 (100)
food			
take			

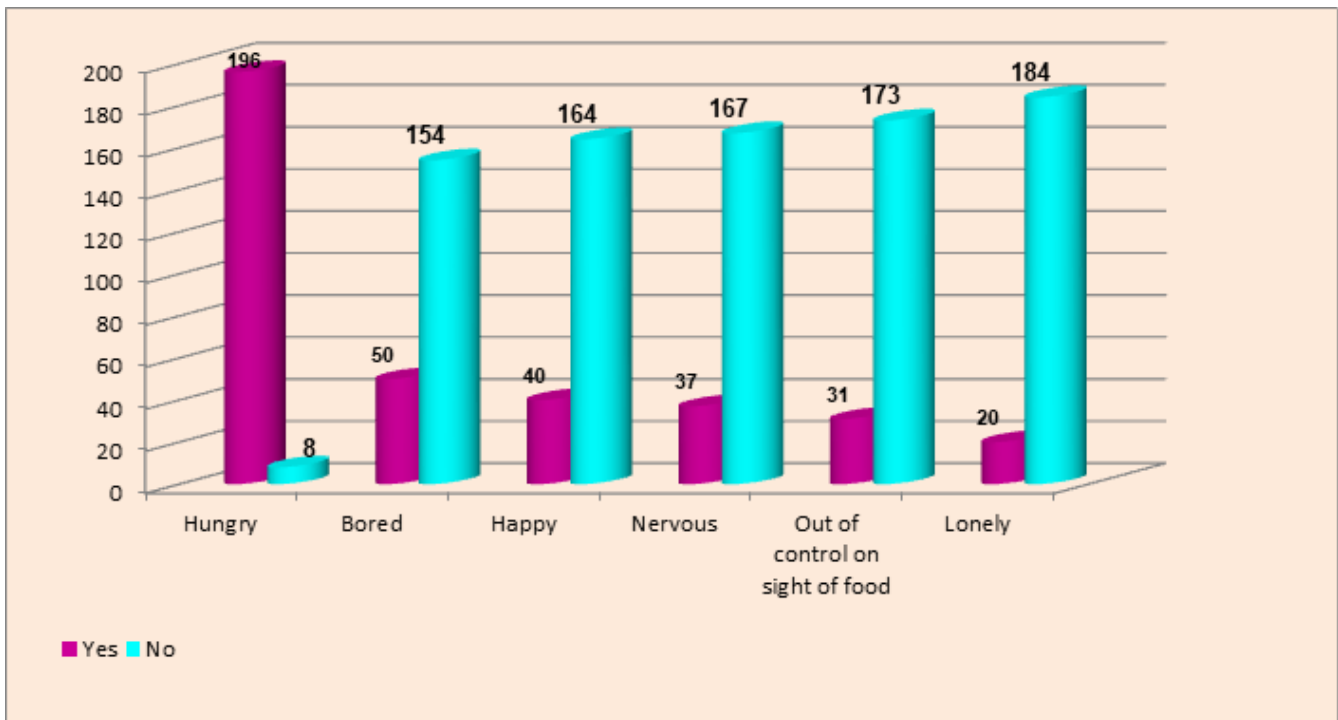


Figure 1. Factors associated with food intake in study population

our study 71.6% study subjects were found to be actively involved in exercise or other form of physical activity However only 9.8% of the subjects were doing exercise daily and 22.5% were doing exercise on weekly basis, The results are comparable to study done by <sup>7,13,27-28</sup> who reported 63% of physical activity in past one year in their study subjects. As Ganasegeran et al. reported majority (98%) in our study also didn't comment or denied on alcohol and smoking consumption. It may be due to respondent bias as students were not able to write openly about the same knowing the information was being collected by their own teachers.

If we talk about the psychological factor affecting the eating pattern of the students Apart from being hungry which should be associated with eating, students were found to have something or eat when they were feeling bored (24.5) followed by feeling happy (19.6%) ,nervous (18.1%) ,out of control feeling after sight of food (15.15) and Feeling lonely (9.8%). Out of these variable feeling happy, hungry and lost control on the sight of food were found to be statistically significant All the figures were less if we compare the data with somewhat similar questions done by Ganasegeran et al.2012 in which he found that nearly 48.5% ate because of feeling lonely, 62.1% felt completely out of control when it comes to food, 53.8% ate till stomach hurts, 53% ate because of feeling upset or nervous and 59.1% ate because of feeling bored. The majority ate because of feeling happy (80.3%).None the less it was inference that the emotional factors and psychological state do impact eating pattern in young adults.

In our study we found that almost 60% of people had adequate information regarding balance diet which is less if

we compare with other study<sup>22,29</sup> and 76.5% of the students said they actively seek information regarding balance diet and have desired to learn about balance diet .The quoted figure is high if we compare with study <sup>22</sup>

**which only quoted 51% students wants to learn about healthy diets.** Also there was gap found to be in what they know and what they practice and at time seven knowing the concepts of balance diet and food pyramids, it is difficult to stick to it because of busy schedule and easy availability of fast food with in campus. The same was noted in one systemic review done by **Sam Abraham et al. which documented that the students also showed a large agreement on not focusing on the calories consumed when eating fast food**<sup>30</sup>. These shows there may be a lack of concern relating to the large amount of calories that fast food contains and the value of those calories when they are socializing with friends. However in a review article by Lua pei lin et al. done in Malaysia in 2011 it has been found that “significant and beneficial changes in dietary habits have been found for college students after the implementation of nutrition interventions via various techniques.” In particular, nutrition education and its combination with supplement provision appeared to be the best methods for enhancing students’ eating habits and promoting healthier diets and lifestyles<sup>31</sup>.

**Limitation**

The sample size is small also it is done in one medical college students only hence the results can't be generalized to other medical college students .However in discussion investigators have tried to save as much comparative studies as possible. Furthermore detailed studies about the actual

pattern of their eating with quantification of the nutrients are needed so that the lack or excess of nutrient can be found out and corrective measured applied in that respect only. Also since the data was collected through self-filled questionnaire there may be some scope of biasness in the study is present.

## 5 CONCLUSION

Overall nutritional and eating habits were found to be good in students but also found were the pattern of infrequent and irregular meals with more number of students skipping daily breakfast and meals and less than recommended intake of fruits and vegetables on daily basis. Much more efforts are required to be put to teach about adequate nutrition and its implication on health. Also many psychological factors were also found to be responsible for making choices in eating pattern.

Improving dietary habits is a societal, not just an individual problem. Food intake per say is considered individual responsibility however it's a well-known fact that it is majorly influenced by environmental and societal factors. Thus to break the pattern of unhealthy food consumption in individuals it is required to develop an overall healthy environment with the removal or obesogenic food products and sensitizing population about it. Therefore it demands a population-based, multispectral, multi-disciplinary, and culturally relevant approach. as suggested by WHO

Keeping the findings in mind it should, a multidepartment approach should be planned to keep medical college students aware of nutrients they are eating and to help them in making healthy choice towards their own nutrition. Also nutrition related problems should be discussed more elaborately ,also the part where nutrients plays in recovery of patients should be explained practically to students since in future they also have to deal with same kind of scenarios.

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