CHANGING TRENDS IN LIFESTYLE BEHAVIOUR AND PHYSICAL ACTIVITY ON BODY MASS INDEX AMONG MEDICAL STUDENTS

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ABSTRACT

BACKGROUND

Early sleep, early waking up, regular breakfast and light-to-moderate exercise all constitute healthy habits. Balanced diet, regular sleep and adequate physical activity are major factors in the promotion and maintenance of good health in human life. Regrettably these habits are not very frequent among medical students, because of exceptionally tiring schedule, protracted studies and burden of performing well in medical colleges. The study aims to correlate the trends in breakfast habits, mid-day snacking, sleeping habits and physical activity in relation to body mass index among medical students.

METHOD

This was a single centre cross-sectional questionnaire based study conducted at Jubilee Mission Medical College & Research Institute, Thrissur, Kerala. The target population was 1st year MBBS students. We collected data from 234 students. The study duration was from August 2014 till September 2015. Convenient sampling was implied for the collection of data.

RESULTS

Mean age of participants was 20.85 ± 0.9 years, while mean BMI of participants was 24.7 ± 6.31 kg/m2. Average sleep duration was 7.1 hours ± 3.9 hours while average physical activity was 208 min/week ± 92 min/week. We observed that females (63.4%) tend to skip breakfast twice more than males (27.9%). Students who had regular breakfast were found to have a lower BMI than those who did not. Moreover, those who took breakfast were found to be more physically active than those who skipped breakfast.

CONCLUSION

Since it was found that a regular consumption of breakfast, adequate sleep and exercise not only lowers BMI but also makes a person more physically fit. Therefore, it is recommended to start the day with a healthy breakfast having all the essential nutrients.

KEYWORDS

Life style, Behaviour, Physical activity, Body mass index.

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INTRODUCTION: Transition from high school to college can be extremely stressful time for young adults. First year MBBS students being independent, have to deal with changing familial and social roles and more difficult courses that demand a greater amount of dedication and time management skills. This transition adjustment to college life is considered a chronic stress throughout the student's collegiate career, which is the cause of their ignorance to their balanced diet.[1,2,3]

Balanced diet, regular sleep and adequate physical activity are major factors in the promotion and maintenance of good health in human life. Obesity occurs whenever energy consumed by food and drinks exceeds that which can be utilised for an individual's metabolism and his physical activity. It has been seen that lifestyle affects the college students due to their fast food preferences and less participation in physical activity with respect to Body Mass Index (BMI).[4]

The terms "Obesity" and "Body Mass Index" (BMI) go hand in hand. BMI is frequently used, easy to measure and fairly reliable indicator of body fat percentage which reasonably predicts morbidity and mortality associated with higher body fat content. Higher values of BMI are significantly associated with increased risk of hypertension, heart diseases, stroke, diabetes, arthritis, breathing problems and certain types of cancers and thus reduced life expectancy.[5,6,7]

Breakfast literally meaning breaking-the-fast of the night, refers to the first meal taken after a night's sleep, which is usually consumed before the start of daily chores of life. It is the fuel that keeps the brain, mind and body running throughout the day. Regarding timeframe, the definition of breakfast varies. The present study has chosen a timeframe for breakfast between 6 a.m. and 9 a.m.[8]

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Even though breakfast is considered the utmost important meal of the day yet it is the most neglected meal of the day. It is considered to have crucial role both in short term and longterm physical and mental health.[9] Belloc and Breslow in their study considered eating breakfast as one of seven healthy habits, they reported regular breakfast consumers reported significantly better physical health than skippers.[10] Studies suggest that there are two biological mechanisms through which breakfast may influence behavioural, affective and cognitive performance.[11,12,13] The first involves metabolic changes associated with an overnight fast to sustain the availability of energy and nutrients to the central nervous system. While the other involves the longterm beneficial effects to furnish superior nutritional status, which can consequently affect cognition.

Studies conducted by Cho et al found that eating breakfast may play a more significant role in weight maintenance than total kilocalorie intake. On the other hand breakfast skippers tend to gain, rather than to lose weight, because they are more inclined to overcompensate for the loss of kilojoules (KJs) at breakfast by eating more fat rich, high energy foods later in the day, especially at lunch or dinner.[14] Breakfast skipping has also been contended to have deleterious effects upon various physical and mental aspects. Numerous studies have found that breakfast skippers have relatively worse intake of various vitamins, minerals and nutrients that are lost as a result of skipping breakfast which cannot be compensated by any meal of the day. Evidences suggest that breakfast takers have relatively better eating habits and higher daily intake of vitamins A, B_6, B_{12}, and Calcium.[15]

Breakfast, despite making noteworthy nutritional contribution to dietary quality and overall health, unfortunately is, more commonly missed than any other meal.[16] Previous studies have found that breakfast consumption has declined in all age groups over the past 25 years[17] and trend of breakfast omission is highest among adolescents and young adults.[18] Multitude of researches also shows that trend of breakfast omission increases from childhood to adolescence[19] and trend of breakfast omission is relatively higher among females compared to males.[20,21]

Adequate amount of sleep is also important for one's mental and physical health, for cognitive restitution, processing, learning and memory consolidation.[22,23] People who sleep less are more prone to emotional instability, cognitive dysfunction, decreased concentration, memory loss, daytime sleepiness, decreased concentration and most important problem of our concern here obesity, thus inadequate sleep effects our health in a similar manner as skipping breakfast does with both short and longterm influences on our wellbeing.[24]

Regarding physical health of the individual it is considered as central component of nutritional contentment, contributing significantly to total daily energy and nutrient intake.[25,26] Physical activity Guidelines Advisory Committee[27] and World Health Organization currently recommend at least 150 minutes per week physical activity of moderate-to-vigorous intensity.[28] There is a dose-response relation for cardiovascular diseases and coronary heart diseases with credit time spent in activity. Multiple studies indicate that significant risk reductions occur at levels of 150 minutes of at least moderate-intensity activity per week ensuring greater life expectancy[29,30] and better quality of life.[31,32]

It has been seen that balanced diet, good physical activities and healthy trends have a large effect on the overall wellbeing and quality of life of the student not only during college but for many years afterwards too.[33] So the purpose of the study is to correlate the trends in breakfast habits, midday snacking, sleeping habits and physical activity in relation to body mass index among medical students. Colleges can be the effectual platform for students to direct them in order to encourage healthy practice of regular breakfast intake and a good eight hour sleep everyday especially among medical students, who are aware of significance of healthy lifestyle more than any other disciplines.

MATERIAL AND METHODS:

Study Design: This was a single centre cross-sectional questionnaire based study. The target population was 1st year MBBS students of Jubilee Mission Medical College & Research Institute, Thrissur, Kerala. The study was conducted from August 2014 till September 2015. We collected data from 234 students. Data was collected from the students in the lecture halls on a structured questionnaire and the questionnaire was explained to the students beforehand. The heights and weights of students were personally taken and recorded on the questionnaire. Written informed consent was obtained from the students after explaining the study objectives. The study was conducted after the approval from Ethical Review Board of Jubilee Mission Medical College.

Inclusion Criteria: We were able to collect data from 234 students. All those who regularly took breakfast and all those did not have breakfast, those who had a midday snacks, were also included in the study.

Exclusion Criteria: Those who seldom had their breakfast were excluded from the study.

Questionnaire: A pre-designed questionnaire was used for data collection which includes age, gender and socioeconomic status, breakfast habits, midday snacking, duration of sleep, anthropometric parameters like their weight and height from which body mass index (BMI)can be calculated. The weekly physical activities of the students were also noted.

Breakfast timing and midday snacking.

The present study has chosen the breakfast timeframe between 6 a.m. and 9 a.m. All food taken after 9 a.m. was excluded from breakfast category. Midday snacks timeframe was from those who had between 10-11.30 a.m. and all food taken after 12 pm was considered as lunch.

Categorisation of BMI[34]:

- Underweight (<18.5 kg/m2).
- Normal (18.5-24.9 kg/m2).
- Overweight (>25.0 kg/m2) and
- Obese (>30.0 kg/m2).

Levels of Physical Activity: Moderate physical activities such as cycling, walking and aerobics were included and the amount of time spent per week were calculated and then grouped as credit hours of moderate physical activity according to the guidelines given by Physical Activity Guidelines Advisory Committee 2008[27] and World Health Organization 2010 [28] into less than 150 minutes per week and more than or equal to 150 minutes per week. Those who had an activity of <150 minutes per week were considered inactive/inadequate physically active and those who had ≥150 minutes per week of activity were active/adequate physically active.

Data Entry and Analysis: Data was entered and analysed using Windows Statistical Package for Social Sciences (SPSS) version 19. Charts and tables were used to express the results of the study.

RESULTS & DISCUSSION: Our study shows that mean age of students was 20.85±0.9 years, while mean BMI of participants was 24.7±6.31. Average sleep duration was 7.1 hours±3.9 hours while average physical activity was 208 min/week±92 min/week. Male students (52.1%) (Table 1) were marginally more compared to females (47.9%). More students belonged to middle class (77.8%) than higher class (22.2%), while no case of low socioeconomic class was recorded. In our study, trend of skipping breakfast among medical students was 45%, while the trend of mid-day snacks was observed to be 57.3%. Sleep duration was most frequently distributed around 6 to 8 hours, followed by earlier and later durations in hours. Albertson et al.[34] reported that physical activity is closely related to significantly decreased BMI which closely relate to our findings.

Questions	Response	Sample size (n=234)	Percentage %
Gender	Male	122	52.1
	Female	112	47.9
SES	Upper	52	22.2
	Middle	182	77.8
	Lower		
Dietary habits			
Take breakfast regularly	Yes	129	55.2
	No	105	44.8
Take mid – day snacks	Yes	134	57.3
	No	100	42.7
Duration of sleep	<6 hrs	77	33
	6-8 hrs	104	44.3
	>8 hrs	53	22.7
Duration of physical activity/ week	<150 min	131	56
	>150 min	103	44
BMI ranges (Kg/m2)	Under weight (<18.5)	35	15
	Normal (18.5-24.9)	118	50.4
	Over weight (25 -29.9)	55	23.5
	Obese (>30)	26	11.1
Questions	Response	Sample size (n=234)	Percentage %
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Duration of sleep	<6 hrs	77	33
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BMI ranges (Kg/m2)	Under weight (<18.5)	35	15
	Normal (18.5-24.9)	118	50.4
	Over weight (25 -29.9)	55	23.5
	Obese (>30)	26	11.1

Table 1: Variables used in the study

It has been observed that regular breakfast consumption is associated with general wellbeing of an individual and the person is more likely to indulge in physical activity. A Finnish study reported regular breakfast eating was consistently associated with good health and the individuals were more inclined to engage in physical

activity.[35] There were 44% students performing physical activity of more than 150 minutes per week. Majority of students i.e. 50.4% had BMI within normal range (Table 1).

Observing gender differential among different variables, we observed that females tend to skip breakfast (63.4%) around twice more than males (27.9%) (Table 2). This is evident from other studies as well.[9,35] It is probably because of common misconception, prevalent among girls, that skipping breakfast aids in decreasing weight.[36]

Gender	Breakfast eaten (129)	Breakfast skipped (105)	p-value
Male (122)	88(72.1%)	34(27.9%)	<0.001
Female (112)	44(36.6%)	71(63.4%)	

Table 2: Relation of gender with breakfast skipping

Gender	Sleep duration(hours)	Standard Deviation	p-value
Male (122)	7.5	3.2	0.043
Female (112)	6.7	2.8	

Table 3: Relation of gender with sleep duration

Our study also reports that females tend to sleep less than males (Table 3), probably because sleep disorders are prevalent among females[37] and statistically significant lesser trend of physical activity (Table 4) among female students when compared to male students. Other studies state that only one-third of teens are getting recommended 9 hours of night-time sleep which is lower in our study.[38] Observational and experimental evidences indicate that sleep curtailment is associated with decreased secretion of leptin, increased secretion of ghrelin, increased level of cortisol and consequently increased hunger and appetite.[39]

Gender	Physical activity duration (minutes/week)	Standard Deviation	p-value
Male (122)	289 min/wk.	89 min/wk.	< 0.001
Female (112)	127 min/wk.	52 min/wk.	

Table 4: Relation of gender with physical activity

There are conflicting evidences concerning relationship between breakfast consumption and social class. Multiple studies reported that economically disadvantaged participants were either found to indulge in low quality breakfast behaviours or completely skip breakfast.[16,40] In the present study skipping breakfast was observed to have statistically significant associations with gender, socioeconomic status, mid-day snacking. Participants from middle socioeconomic status were found to omit breakfast (47.9 %) more compared to participants from upper class (34.6 %) (Table 5).

Break fast	Upper class (52)	Middle class (182)	p-value
Yes (129)	34(65.4 %)	95(52.1 %)	0.045
No (105)	18(34.6 %)	87(47.9 %)	

Table 5: Relation of breakfast skipping with socioeconomic status

Studies have shown that the energy intake of normal and underweight persons is more evenly distributed throughout the day than that of the obese.[41] Since weight is inversely related to the number of times that a person eats during the whole day,[42] the main reason anticipated to explain decreased ability to lose weight among breakfast skippers is increased frequency to indulge in snacks and other meals during the rest of the day.

Break fast	Midday meals		p-value
Yes (129)	Yes (134)	No (100)	0.005
	59(44 %)	70(70 %)	
No (105)	75(66 %)	30(30 %)	

Table 6: Relation of breakfast skipping with midday snacks

Similarly, a significant compensatory mid-day snacking was observed in our study among breakfast skippers (66 %) (Table 6), performed less physical activities (Table 7) and slept for lesser duration of time (Table 8). Other studies also report that breakfast consumers tend to snack less often than those who are in habit of skipping breakfast.[43]

Break fast	Physical activity duration (min/ week)	Standard deviation	p-value
Yes (129)	254.9 min/wk.	105 min/wk.	< 0.001
No (105)	162.1 min/wk.	89 min/wk.	

Table 7: Relation of breakfast skipping with physical activity

Break fast	Sleep duration (hrs)	Standard deviation	p-value
Yes (129)	7.7	3.2	0.002
No (105)	6.5	2.8	

Table 8: Relation of breakfast skipping with sleep duration

Significantly lower BMI is reported in our study being associated with breakfast consumption, male gender, middle socioeconomic status and mid-day snack omission (Table 9).

Response	Mean BMI	Std. dev	p value
Took breakfast/not (n = 234)			
Yes (129)	23.8	3.27	<0.001
No (105)	25.4	3.84	
Gender (n= 234)			
Male (122)	25.9	7.3	0.017
Female (112)	23.5	6.7	
Socioeconomic status (n= 234)			
Middle (182)	23.7	4.38	
Higher (52)	25.8	5.83	
Midday snacks (n= 234)			
Yes (134)	26.5	3.9	0.04
No (100)	22.9	3.7	

Table 9: Relation of variables with BMI

Though in many studies no relationship has been found between BMI and breakfast eating pattern multitude of researches, including ours, confirm the finding that skipping the morning meal is associated with greater trend of adiposity.[42,44] Breakfast consumers are more likely to have lower body mass index than breakfast skippers.[45] So the present study shows that eating breakfast, adequate sleep duration and sufficient physical activity significantly lowers the BMI.

CONCLUSION: The frequency of overweight is high among medical students. Dietary behaviour and physical inactivity are major independent predictors of overweight and higher BMI. The present study supports that regular consumption of breakfast with adequate sleep and physical activity not only lowers the BMI but also makes a person more physically fit. The study also reinforces the need for creating awareness among the medical students regarding the positive effect of normal nutritional status and adoption of healthy life style behaviour.

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