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RESEARCH PAPER

Factors Associated with Breakfast Skipping among Undergraduate Medical Students of a Selected Medical College in Bangladesh

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Abstract

***Background*:** Breakfast is a commonly skipped meal especially for young adult during their university study period.

Objective: This study aimed to determine the factors related to skipping breakfast among medical students in this study.

Methods: This cross-sectional study was conducted among the 4th year medical students of Sher-e-Bangla Medical College, Barishal in January 2022 using a self-administered questionnaire recording the demography, breakfast consumption habits, and other factors like physical condition, appetite, sleep quality, social relation with others and learning.

***Results*:** A good proportion of the students (63.3%, 95% CI: 56.18-70.38%) skip breakfast. Waking up late (OR-11), sleeping late (OR-7), and staying in hostels (OR- 8) were the important factors significantly associated ($p<0.05$) with break-fast skipping.

***Conclusions*:** Breakfast skipping behavior is high among undergraduate medical students. The students should be encouraged to eat regular breakfast through health promotion campaigns.

Keywords: Breakfast skipping, medical students, hostel staying, late sleeping, late waking up.

Introduction

Breakfast is considered to play a crucial role in maintaining the physical health and intellectual capabilities of a person. It is central to one's daily nutritional requirement, contributing significantly to the total daily energy and nutrient intake.[1]

The glycogen stores of any person are depleted from long overnight fasting. As younger people have a higher brain glucose metabolism, a relentless supply of energy is needed to maintain a higher metabolic rate among young individuals, which can be fulfilled by a balanced and healthy breakfast.[2] Apart from improving academic performance, breakfast provides the necessary energy for good physical activity, lower the chances of cardiovascular diseases, hypertension, hyper-cholesterolemia, and metabolic syndrome.[2, 3] A recent study (2020) in China has mentioned that regular breakfast intake is associated with better academic performance among the medical and dental students.[4]

In contrast, breakfast skipping may be linked to the up-regulation of appetite later in the day which can affect the metabolic and hormonal responses to food consumed later in the morning resulting in weight gain and increasing the risk of cardio-metabolic diseases.[5]Breakfast skipping and weight gain is associated positively irrespective of cultural diversity.[6] Furthermore, breakfast skipping has been studied to be associated with depression, cardiovascular diseases, diabetes mellitus, and cancers.[7-11] Skipping breakfast could cause mental distress thereby is bearing the potential to affect academic performance. Also, breakfast skippers reported higher levels of fatigue and poor attention during their classes compared to non-skippers.[12]

Body mass index has been measured to indicate body fat percentage that could predict morbidity and

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mortality.[1] Some studies have shown that people who consume breakfast regularly tend to have a normal body mass index and are less likely to be overweight than those who do not do that regularly.[13] Breakfast skipping in adolescents and adults has been associated with various health-compromising behaviors and unhealthy lifestyles, such as tobacco, alcohol, and substance use. Among those who skip breakfast, increased snacking, lunch skipping, sedentary lifestyle, and obesity are more common than among breakfast eaters.[14, 15] Conversely, regular breakfast eaters engage in other healthy behaviors, such as reduced snacking, lower total fat intake, and the consumption of a healthy diet, leading to a health-conscious lifestyle.[16]

Breakfast skipping is highly prevalent in the United States and Europe (10% to 30%). Nonetheless, it is a fairly common phenomenon with 23% of adults to do such as evidenced in developing countries too.[17] The prevalence of breakfast skipping among the urban adult population (35.2%) and university students (53.85%) is high in Bangladesh.[17, 18]In addition, some countries reported of higher (30–75%) prevalence of skipping breakfast.[12, 19-22]

Young adults between the age of 18- 25 years are often the neglected group in any health awareness program compared to other age group of people. These young adults' dietary habits are influenced while they leave home and adjust to independent living in higher education life.[23] They skip breakfast due to lack of time to eat, waking up too late, financial constraints, stress, family eating patterns, lack of appetite, control weight, eating late at night, and class pressure.[24]

It is often assumed that undergraduate medical students have a greater knowledge about healthy lifestyles and dietary habits when compared to their non-medical counterparts.[25]Albeit medical students had sufficient knowledge regarding good dietary habits, they fail to apply this knowledge into practice. The stress of university life and load of medical study could negatively influence their diet.[19]Poor time management is the most commonly cited factor preventing the achievement of a healthier lifestyle among undergraduate medical students.[26]

Health personnel usually provide good life style measures for the community.[27]Because the medical students are going to be the future physicians, practicing a healthy dietary habit is important for them so that they can uplift themselves as a role model for the society. Ignoring a healthy lifestyle could be a fiasco towards a health promotion opportunity that can be followed by others.[25] So they can adapt a healthy lifestyle which should be continued after they graduate to provide health care.[22]

Thus, medical undergraduates should understand and develop healthy lifestyles by adopting healthy eating patterns as future doctors and promoters of a healthy lifestyle.[24]Studies on breakfast habits of medical students are few.[12, 22]Sikder et al. in Bangladesh explored the dietary habits and body weight status of undergraduate medical students of Bangladesh and their influence on academic performance. They reported breakfast as the commonest meal skipped among medical students though it didn't affect their academic performance. However, there are no published data on specific factors related to breakfast skipping till to date available in Bangladesh. This study is conducted among 4th year undergraduate medical students of Sher-E-Bangla medical college, Barishal to determine the factors associated with breakfast skipping.

Materials and Methods

This cross-sectional study was performed among 209 medical students in the fourth year at Sher-E-Bangla Medical College, Barishal in January 2022. From all invited students, 177 participated voluntarily (response proportion 63.3%). The objectives and benefits of the study were verbally explained to the students followed by obtaining written consent from those who agreed to participate. A written form was attached to the questionnaire with the assurance of confidentiality of the data without affecting their course progress. We took approval from the Ethical Review Board of Sher-E-Bangla Medical College, Barishal to conduct this study (Ref No. SBMC/Barishal/2021/1345).

We developed a self-administered questionnaire based on previously published research. The questionnaire consisted of three parts. The first part included questions on demographic data; such as age, gender, education level, residence, monthly family income, height and weight, body mass index - was calculated by the standard formula: weight in kilogram (kg) divided by height in squared meter (m^2). The second part included questions regarding the breakfast consumption habits of the participants, frequency of and reasons for skipping breakfast. The third part included physical condition, appetite, sleep quality, social relations, and learning. The monthly income

was classified by the researchers' consensus as low income with an income of less than 30000 taka a month, middle income from 30000-50000 taka a month and high income from 50000 taka and above.

Breakfast is defined as the first meal of the day in the morning. Individuals who reported to skip their breakfast at least once per week were considered as breakfast skipper.[28] We assessed sleeping quality from the students' perception, with 3 levels of responses (good, medium, and bad), from good (feeling energetic after waking up) to medium to bad (feeling dizzy or in a bad mood after waking up). Physical condition was evaluated similarly in 3 levels, from good (effective in work and leisure activities) to medium to bad (not effective in work and leisure activities). Appetite evaluation was also recorded in 3 levels from good (want to eat when it is time to eat) to medium to bad (loss of appetite as a whole).

We entered the data in excel where we made the necessary cleaning of the data to prepare for analysis. We then exported the data to SPSS where the final analysis was done. We used frequency and percentage for qualitative variables and mean, standard deviation (SD), minimum, maximum for quantitative variables. We also expressed the median, first and third quartile values where we found the variable with high SD. The qualitative variables were analyzed with chi square test, while the difference between quantitative variables was assessed with a t-test. Taking all the significant variables from univariate and bivariate analysis, we constructed a model for logistic regression as we had a dichotomous outcome variable of skipping and not skipping breakfast. We decided a p-value of 0.05 and less to be significant.

Result

The prevalence of skipping breakfast was 63.3% (95% CI: 56.2-70.4%). Table I describes some baseline characteristics of the students. They were around 23 years on average (22.8 ± 0.9 years). Half of them were males, around four quintiles resided in the hostel, a decile lived at home and the rest (7%) lived in rented houses. The family income ranged from as low as 8000 taka/month to as high as 2,00,000 taka/month, having a mean of 41000 and a very high SD of 24000 taka, a median of 40000 taka, first quartile 25000 taka and third quartile 50000 taka. When further classified, we found that almost 86% of the family income were within 50000 taka leaving the rest 14% above 50000 taka. The average height was 162± 9.8 cm and that of

Table I: Baseline information of the students (n=177)

Variables	Mean± SD	Min-max
Age (year)	22.8± 0.9	21-25
Female (n)	90	
Residence		
Home (n)	22	
Hostel (n)	143	
Rented house (n)	12	
Monthly income (Tk.)	41441±24274	8000-200000
Income group		
Low (Tk. 30000)	71 (40.1)	
Middle (Tk. 30000-50000)	81 (45.8)	
High (Tk. >50000)	25 (14.1)	
Height (cm)	161.93± 9.8	110-182
Weight (kg)	62.30± 10.5	40.5-83.0
Waist (cm)	83.45± 9.6	61.0-109.2
Skipping breakfast (n)	112 (63.3)	

weight was 62±10.5 kg. The average waist was 83.5±10 cm.

When we looked at the factor associated with skipping breakfast (Table II), we found that the students living in hostels (p=0.009), woke up late (p<0.001) and the late sleeper (p=0.006) skipped breakfast more than those living in the rented house, woke up early and sleep early respectively. Other variables didn't show any association with skipping breakfast.

As we see the physical condition from good to medium to bad, there is an increasing trend of skipping breakfast from 52% to 71% to 100% respectively (p= 0.01). A similar picture is observed while we looked at the study attention (p= 0.002). The other variables like appetite, sleep quality and relation with others had no relation with skipping breakfast as evidenced by Table III.

We took all the significant variables from basic analysis to construct the logistic regression model for skipping breakfast which is depicted in Table IV. The model found waking up late to produce the highest odds (11) with the risk of skipping breakfast, followed by residing in the hostel (8), sleeping late (7), medium (3.6) and bad (3.9) study attention and medium physical condition (2.4), adjusted for others. The other variables didn't show any relation to becoming a factor for skipping breakfast.

Table II: Factors assessment with skipping breakfast

Variables	Non skipper	Skipper	Total	p
Monthly Income	44015± 26063	39946± 23161		0.28
BMI	24.15± 4.45	23.60± 3.61		0.37
Waist	84.63± 9.77	82.77± 9.41		0.27
Sex				
Male	28 (32.2)	59 (67.8)	87	0.22
Female	37 (41.1)	53 (58.9)	90	
Residence				
Home	12 (54.5)	10 (45.5)	22	0.009
Hostel	45 (31.5)	98 (68.5)	143	
Rented house	8 (66.7)	4 (33.3)	12	
Wake up late				
No	56 (52.3)	51 (47.7)	107	<0.001
Yes	9 (12.9)	61 (87.1)	70	
Sleep Late				
No	63 (40.4)	93 (59.6)	156	0.006
Yes	2 (9.5)	19 (90.5)	21	
Stress				
No	62 (38.5)	99 (61.5)	161	0.12
Yes	3 (18.8)	13 (81.2)	16	
Dislike Hostel Food				
No	61 (38.1)	99 (61.9)	160	0.24
Yes	4 (23.5)	13 (76.5)	17	
Loss weight				
No	63 (37.5)	105 (62.5)	168	0.35
Yes	2 (22.2)	7 (77.8)	9	

Table III: Assessment of aptitude with skipping breakfast

Physical condition	Non skipper	Skipper	Total	p
Good	39 (47.6)	43 (52.4)	82	0.01
Medium	26 (28.6)	65 (71.4)	91	
Bad	0 (0)	4 (100.0)	4	
Appetite				
Good	51 (39.8)	77 (60.2)	128	0.25
Medium	12 (26.7)	33 (73.3)	45	
Bad	2 (50)	2 (50)	4	
Sleep quality				
Good	36 (41.9)	50 (58.1)	86	0.37
Medium	23 (31.1)	51 (68.9)	74	
Bad	6 (35.3)	11 (54.7)	17	
Relation with others				
Good	50 (41.7)	70 (58.3)	120	0.10
Medium	13 (28.9)	32 (71.1)	45	
Bad	2 (16.7)	10 (83.3)	12	
Study attention				
Good	39 (51.3)	37 (48.7)	76	0.002
Medium	22 (27.8)	57 (72.2)	79	
Bad	4 (18.2)	18 (81.8)	22	

Table IV: Logistic regression to assess the factors related with skipping breakfast

Variables	OR	95% CI (Low-High)	p
Residing in home	Ref.	-	-
Residing in hostel	8.08	2.352-27.756	0.001
Rented house	0.605	0.096-3.832	0.59
Wake up late	11.21	4.411-28.475	<0.001
Sleep late	7.052	1.147-43.345	0.04
Good physical condition	Ref.	-	-
Medium physical condition	2.36	1.032-5.383	0.04
Bad physical condition	55565	0.000-00	1.00
Study good	Ref.	-	-
Study medium	3.64	1.53-8.71	0.004
Study bad	3.90	0.92-16.47	0.06

Discussion

Young university students skip breakfast most commonly in their university life. The high prevalence (63.3%, 95% CI: 56.2-70.4%) of skipping breakfast in our study gets support from studies in Sri Lanka (55.4%),[20] Malaysia 56.1%,[19] while a relatively lower prevalence was found in China (28.9%),[22] and in Karachi (18.6%).[24] As we look at the western countries we find a 20% prevalence of breakfast skipping among medical students from United States, 10% from France and 27% from Australia.[29] But there is higher prevalence than our study too, where we find a prevalence of more than 70% skipping of breakfast.[2, 12]However, in Bangladesh, Sikder et al. reported breakfast as the commonest meal skipped (24%) among medical students.[26]

There was a male preponderance to skip breakfast more than the females, which is in conformation with other studies.[22,30] Researchers in other studies have opposing reports of females to skip breakfast more than the males.[6, 24] The probable reason for the females to skip breakfast more than the males may be due to the tendency to reduce their body weight. It is interesting to learn similar findings from studies where males are reported to skip breakfast and females are more likely skipping lunch and dinner.[31]

There could be many factors contributing to breakfast skipping. Waking up late, sleeping late, stress, dislike hostel food, lose weight were the reasons for skipping breakfast from our study. The most common factor for skipping breakfast was waking up late (OR-11). Similar study from Pune revealed that getting up late was the most common reason followed by busy schedule and lack of appetite.[32] Another important reason for skipping breakfast was sleeping late (OR- 7). In Bangladesh, Biswas et al. reported that sleeping were main reasons for skipping breakfast (33%). The use of social media at night or study pressure could be related so they often fail to manage their time for breakfast before lecture in the morning.[18]Oversleeping or late sleeping or disturbed sleep were associated with lack of time or shortage of time in the morning.[24] Studies have reported that poor quality of sleep could result in poor appetite. It is known that breakfast with adequate levels of tryptophan help in a healthy diurnal rhythm, good quality of sleep and good mental health.[29] The other studies in Bangladesh and other countries showed common reasons for breakfast skipping as regular habit, work pressure, lack of time, away from family, unable to prepare, did not like to eat early, not being hungry, and over sleeping.[6,12,17,18] Research has also pointed out attribution of lack of time to be related with breakfast skipping among undergraduate medical students.[12,20,22,29]

Around four quintiles of students resided in hostel and they were more likely to skip their breakfast (OR- 8) compared to those who resided in home and rented house as per our study. This could be due to the adherence to healthy family breakfast eating habits among who reside in home or rented house. Moy et al. showed that students staying in their own houses were less likely to skip breakfast possibly due to the breakfast was prepared by their family members.[23] Participants who lived at home during the academic term and whose parents or family bought the groceries consumed breakfast daily.[15]

We didn't find any relationship between BMI and breakfast skipping in our study. Experts say that people who eat breakfast are less likely to overeat the rest of the day.[3] Ma et al. found that breakfast skipping adults and adolescents tend to eat more for the rest of the day [33] hence being obese.[34] As breakfast skipping increases appetite and diminish satiety, it is associated with more energy consumption during later meals with poor food quality. The hunger aroused by skipping breakfast could shift the food choices also at subsequent meals toward energy and fat-dense foods.[16, 35]

The physical condition also has some relationship with breakfast skipping. This study shows that the students who reported of their medium physical condition produced the odds of about 2.4 times to skip breakfast compared to those who reported of good physical condition of themselves. A significant negative correlation was found between body mass index and self-reported health status: a higher body mass index was associated with a poorer self-reported health status in a study done by Seedat.[15] Irregular breakfast eating habits are related to an increased risk of suboptimal health status.[36]

Self-perceived study attention was higher among non-skippers (OR- 3.6). A study conducted among medical students in China, reported that students who perceived their studies to be easy were regular breakfast eaters and their classmates, who perceived their studies to be hard and laborious were regular breakfast skippers.[22] Similar studies found this relationship between Breakfast eating and education performance and physical fitness among medical students.[4, 37]

Conclusion

A good proportion of undergraduate students skip their breakfast as has been revealed in this study. Waking up late, sleeping late and residing in hostels came up as the most important factors related to this problem.

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