

Article

Lifestyle and dietary habits of high school going students in north-eastern part of Bangladesh during COVID-19 Pandemic

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Abstract: Food habits and lifestyle are risk factors of health problem. Moreover, adulthood health depends on adolescent health. A cross-sectional study was designed to know the lifestyle and dietary habits of high school going students during the pandemic. A semi-structured questionnaire was developed and data were collected randomly from the students. Descriptive analysis, logistic regression model and factor analysis were used to analyze the data. The results revealed that most of the students fairly follow the lifestyle and dietary habits. It is observed that students who read newspapers daily are 75% more likely to follow the dietary pattern. During a pandemic, most of the high school going students in north-eastern part of Bangladesh were taking protein types food (communality=0.724) and vegetables (communality=0.694) maximum times per week. Students increased their sleeping hours (communality=0.784) and intended to do job (communality=0.781) to help their families during the COVID-19. Moreover, the study also observed some important lifestyle factors like- watching mobile/laptop, connecting social media etc. and most of the students (45%) thought that electronic devices hamper their normal education. Taken together, the findings of this study may be useful to make awareness in the society about the healthy and unhealthy lifestyle as well as food habits. Government and Non-Government organizations should take proper nutritional and health related programs in the high schools that provide healthy lifestyle and food habits for improving the public health sector in Bangladesh.

Keywords: students; lifestyle; dietary habits; COVID-19; Bangladesh

1. Introduction

Students of high school mainly refer to teenagers and this period is the interim phase from childhood to adulthood which is the most important part of human life known as adolescence. Though being identified as relatively healthy period, each year 2.6 million teenagers die in the whole world. Those who follow a healthy lifestyle can improve behavior and sustain their well-being but many teenagers' raises unhealthy habits (such as inadequate nutritional intake, rest, and exercise) and risky behaviors (such as tobacco and drug use) that may lead to an unhealthy state (Lean, 2010). At this stage of life, they may have to cope with many changes to their bodies, behavior, and their feelings. On the other hand, the word "Lifestyle" indicates someone's way of living which effects person's health through lifestyle factors such as physical activity, watching TV, using mobile and internet, eating habits, substance abuse (e.g., alcohol and tobacco), and sleeping time (Serdula *et al.*, 1993). A study depicts that three things – changing eating habits, changing combination of time and reduction in duration of exercise in student's lifestyle may significantly effect on students' tension (Cappuccio *et al.*, 2008). According to the world health organization (WHO) early deaths and diseases happens because of negative

health behaviors such as smoking, avoiding exercise, unhealthy sexual activity, and violence and a study shows that in Turkish Society young people don't give much interest in physical activity and healthy diet (Rennie *et al.*, 2005). Self-harming attitude has been increasing nowadays among teenagers which are a powerful cause of suicide. Although in different countries government focuses on healthy nutrition and appropriate exercise for the teenager, the amount of fast food with high fat and sugar that is taken by youths are increasing day by day. With this, the amount of physical exercise is decreasing among teenagers and activities like watching TV, playing online games are increased (Brug *et al.*, 2012; Ko *et al.*, 2008; Bener *et al.*, 2019). Healthy behaviors should be introduced to them early in childhood which helps them to maintain those habits from childhood throughout their adulthood and being familiarized with healthy routines depends on their gender, socio-economic status and availability of educational programs (Çelebi *et al.*, 2017; Musaiger *et al.*, 2011; Judy *et al.*, 2005; Nahas *et al.*, 2009; Anderson *et al.*, 2006; Zaal *et al.*, 2009; Janssen *et al.*, 2004; Cotte, 1998). On the other hand, it has been observed that adolescences are seen to be more related with crimes than past and 43% of murders in each year globally happen among young people (Sultana *et al.*, 2011). Some studies evidently show that insufficient sleep results in dizziness in school and examination hall, irritation, absurd behavior etc. (OhidUllah *et al.*, 2014; Dinges, 1995; Garaulet *et al.*, 2011; Carskadon, 1990; Wolfson *et al.*, 1998; Choi *et al.*, 2009; Ekinici *et al.*, 2014).

Studies reveal that increased television viewing is linked negatively with fruits and vegetables consuming and positively with the consumption of energy drinks and fast foods (Pearson *et al.*, 2011). Nowadays breakfast skipping become a common habit of school going adolescents (Niemeier *et al.*, 2006; Serra-Majem *et al.*, 2004; Law *et al.*, 2013). At the same time, they are getting used to consuming fast food and low-quality food. One of the reasons behind this habit is lacking of time to prepare food at home while there are many fast-food outlets (Wickramasinghe *et al.*, 2004). A study shows that on an average, adolescents visit to fast food outlets twice a week and about one-third of the away from home meals consumed by adolescents are fast foods (Lin *et al.*, 1999) and the trend of consuming food from restaurant and fast-food outlets are increasing drastically (Nielsen *et al.*, 2002). A very concerning matter is that the high school going students consume foods with high fat when they are eating fruits and vegetables lower than recommended (French *et al.*, 2010) and many studies showed that this unhealthy practice is more common in males compare to female (Fagerli *et al.*, 1999; Rappoport *et al.*, 1993; Rathi *et al.*, 2017; Cavadini *et al.*, 2000).

In Bangladesh one-third of total population are teenagers and according to United Nations Population Fund (UNFPA 2014), by 2050 young people will be 10-19% of total population. This information indicates that more attentions are required to fulfill requirements of youngsters without delay (Swinburn *et al.*, 2004).

Unhealthy dietary habits are linked to the dramatic increases of several chronic diseases (cardiovascular diseases, cancer, and type 2 diabetes) that are the causes of mortality in both developed and developing countries in the last several decades. Many studies (Neumark-Sztainer *et al.*, 1998; Munoz *et al.*, 1997; Johnson *et al.*, 1994; Bhuiyan *et al.*, 2013; Uddin *et al.*, 2017; Ahmed *et al.*, 2006; Khan *et al.*, 2017; Banik *et al.*, 2020; Kundu *et al.*, 2020) have been found that adolescents have poor dietary habits; therefore, modification of adolescent eating behavior should be developed. A cross-sectional study (OhidUllah *et al.*, 2018; Khan *et al.*, 2017) also conducted on obesity and food habits of primary school going children in Sylhet city. However, to the best of our knowledge no study has been conducted to know the lifestyle and dietary patterns of high school going students in North-eastern part of Bangladesh. Therefore the study is designed to detect the dietary patterns and lifestyle of adolescents in Sylhet division during the pandemic.

2. Materials and Methods

2.1. Data

Primary data were collected randomly from high school students of the Sylhet division. Data were collected from total 509 students during November 2020 to October 2021. As the schools didn't open because of pandemic, some data were collected via online, some data by visiting the households and the areas of the selected schools. The questionnaire (semi-structured) consist demographic (age, sex, etc.), socio-economic characteristics (own house or rented house, how they come to school, existence of private tutor or coaching etc.), lifestyle characteristics (smoking, sedentary activities, physical activities etc.) and frequency of dietary intake of several food items (focusing balanced diet) daily/weekly/monthly dietary habits. For example, frequency of drinking milk- options: none or 1 glass/month, 1 glass/week, 2-6 glasses/week, 1 glass/day, 2-3 glasses/day etc.

2.2. Statistical analysis

Descriptive analysis (percentage) and logistic regression model have been used in the data. To know the important factors of dietary pattern and lifestyle, factor analysis was also used in this study. SPSS software was used for data analysis.

3. Results and Discussion

Initially several frequency tables have been made up for assessing the socio-demographic characteristics, dietary habits, and lifestyle behaviors of secondary school students.

From Table 1, it was observed that male and female were 50.1% and 49.9% respectively. It was also observed that more than half of the students were Muslims, only 1.0% were Buddhist and the rest belong from Hinduism religion. Total 58% students were from urban area and remaining from rural area. Most of the students' fathers were primary passed (24.1%) followed by secondary passed (21.1%) and graduated (21.1%) and in case of mother, also most of them were primary passed (34.9%) followed by secondary passed (22.4%). It was found that 37.9% of students' fathers were businessman and 22.8% were farmers. Most of the students' mothers were housewives (85.4%). The results revealed that within pandemic around 6% (20000–50000 Taka) students' family income was reduced, almost similar case in students' family income above 50000 Taka. Moreover, it was found that 75.8% of our study participants have their own house.

From Table-2, it was observed that 22.6% of the respondents taking breakfast regularly and about half of them never take breakfast. In case of consuming protein type foods, 34.7% of respondents were regular and 26% of them were never consumed protein type foods. Around 50% of our respondents were irregular in eating vegetables, fruits and junk foods and almost half of the respondents were also irregular in taking milk or dairy food when a notable number of them also never consume these foods. It was also found that about three quarters of the students drink two to three liters water per day.

From Table 3, it was found that around half of the students were underweighted when 46% had normal BMI (Body mass Index), 4.9% of them were over weighted and 0.4% of them are obese. Above 50% of the participants do not follow any dietary pattern. In case of physical exercise, above 55% of the students practice this habit when about 50% of the students were involved in playing sports. On the contrary, most of the students were not involved in any extra-curricular activities and the rate was 79.1%. It was found that about half of the students were active in social media. Again, 45% students think that electronic devices hamper their normal education when 32.2% think that electronic devices have no negative effect on their normal education. To know the factors that are influenced to follow dietary pattern (Yes/No), multiple logistic regression model was used.

From the Table 4, it was observed that practice of dietary habit had increased 30% during the pandemic. The strongest predictor was found in this model was "reading newspapers". The odds ratio in this case was 1.749 which indicated that those who read newspapers on daily basis were almost 75% more likely to follow a dietary pattern. Apart from this, it was notable that 24.5% respondents who were connected to social media more likely to follow dietary pattern and, who watch television in a regular basis were less like to maintain any dietary routine.

To find out the important factors of lifestyle and dietary pattern factor analysis was used. It was found that most of the students of high school going students in north-eastern part of Bangladesh were taking protein types food (communality=0.724) and vegetables (communality=0.694) maximum times per week. It was also observed in lifestyle dimension that students were highly attentive to their study (communality=0.786), increasing sleeping hours (communality=0.784), intend to do job (communality=0.781) during the COVID pandemic. Besides these, it was also found some important factors like increasing sleeping hours, watching mobile/laptop, connecting social media etc.

Usually, adolescent food habits and life style may lead the adulthood habits and lifestyle. Unhealthy lifestyle may be cause of different diseases like cardiovascular diseases, cancer, type-2 diabetes, COVID-19 etc. According to the study findings, it was observed that secondary school students embrace healthy lifestyle behaviors fairly. However, we found that some of the students are irregular in practicing healthy diet. Previous studies supported these results (Musaiger, *et al.*, 2014) (Kilani, *et al.*, 2013) (Rathi, *et al.*, 2017). It was observed that around 6% students' monthly family income was reduced during COVID-19 pandemic and most of the students think electronic devices hamper their normal education. We also observed that reading newspaper and connecting social media plays positive role on following dietary pattern students who read newspapers daily and connected with social media are more likely to follow dietary pattern. On the other hand students who are watching television more they are less likely to follow dietary pattern.

Changes in lifestyle factors, such as increasing the intake of protein type foods, vegetables, fruits as well as reducing intake of junk food, were important determinants of self-rated health among students. The results

claims that not only just any specific factor but multiple lifestyle factors are dominating unhealthy practice among young people like secondary school going students. However, during COVID-19 pandemic, students increased their sleeping time, intend to do job, watching television, connecting social media using mobile/computer.

Table 1. Socio-demographic characteristics of the students.

Variables	Categories	Frequency (%)
Gender	Male	255 (50.1%)
	Female	254 (49.9%)
Religion	Islam	278 (54.7%)
	Hinduism	225 (44.3%)
	Buddhism	5 (1.0%)
	Christianity	0 (0.00%)
Residence	Urban	296 (58%)
	Rural	214 (42%)
Father's Education	Primary	121 (24.1%)
	Secondary	106 (21.1%)
	Intermediate	97 (19.3%)
	Graduate	106 (21.1%)
	None	72 (14.3%)
Mother's Education	Primary	176 (34.9%)
	Secondary	113 (22.4%)
	Intermediate	78 (15.5%)
	Graduate	66 (13.1%)
	None	71 (14.1%)
Father's Occupation	Business	191 (37.9%)
	Govt. Job	51 (10.1%)
	Private Job	59 (11.7%)
	Farmer	115 (22.8%)
	Others	88 (17.5%)
Mother's Occupation	Business	8 (1.6%)
	Govt. Job	26 (5.1%)
	Private Job	22 (4.3%)
	Housewife	434 (85.4%)
	Others	18 (3.5%)
Monthly family income before pandemic	Below 20000	161 (32.7%)
	20000-50000	221 (44.8%)
	Above 50000	111 (22.5%)
Monthly family income within pandemic	Below 20000	219 (44.8%)
	20000-50000	190 (38.9%)
	Above 50000	80 (16.4%)
Own House	Yes	382 (75.8%)
	No	122 (24.2%)

Table 2. Dietary habits of the students.

Variables	Categories	Frequency (%)
Taking Breakfast	Irregular	155 (30.9%)
	Regular	113 (22.6%)
	Never	233 (46.5%)
Taking Protein type foods	Irregular	199 (39.3%)
	Regular	176 (34.7%)
	Never	132 (26%)
Taking Vegetables	Irregular	260 (51.1%)
	Regular	142 (27.9%)
	Never	107 (21%)
Taking Fruits	Irregular	302 (64.5%)
	Regular	90 (19.2%)
	Never	76 (16.2%)
Taking milk/ dairy food	Irregular	245 (52%)
	Regular	102 (21.7%)
	Never	124 (26.3%)
Eating junk foods	Irregular	269 (60.4%)
	Regular	58 (13%)
	Never	118 (26.5%)
Drinking water	2-3 liters/day	364 (72.1%)
	4-5 liters/day	108 (21.4%)
	5-6 liters/day	16 (3.2%)
	More than 6 liters/day	17 (3.4%)

Table 3. Lifestyle behavior of the students.

Variables	Categories	Frequency (%)
BMI	Underweight	240 (48.7%)
	Normal	227 (46%)
	Overweight	24 (4.9%)
	Obese	2 (0.4%)
Follow Diet	Yes	217 (42.5%)
	No	293 (57.5%)
Physical Exercise	Yes	274 (55.1%)
	No	223 (44.9%)
Play Sports	Yes	252 (50.5%)
	No	247 (49.5%)
Extra-curricular activities	Yes	104 (20.9%)
	No	393 (79.1%)
Use Glasses	Yes	96 (19.2%)
	No	403 (80.8%)
Social Media	Yes	258 (51.9%)
	No	239 (48.1%)
Electronic device hamper normal education	Yes	225 (45%)
	So	114 (22.8%)
	No	161 (32.2%)

Table 4. Results of multiple Logistic Regression model of Dietary pattern.

Predictor Variables							95% C.I for Exp(B)	
	B	S.E	Wald	Df	Sig.	Exp(B)	Lower	Upper
Monthly family income before pandemic	-0.278	0.227	1.504	1	0.220	0.757	0.485	1.181
Monthly family income within pandemic	0.264	0.229	1.333	1	0.248	1.303	0.832	2.041
Reading newspapers	0.559	0.110	25.904	1	0.000	1.749	1.410	2.169
Watching televisions	-0.054	0.087	0.384	1	0.535	0.948	0.800	1.123
Connection in social media	0.220	0.203	1.170	1	0.279	1.245	0.837	1.854
Constant	-1.187	0.343	12.004	1	0.001	0.305		

4. Conclusions

Taken together, it conclude that a considerable percentage (42.5%) of students in north-eastern part of Bangladesh follow the lifestyle and dietary pattern. There is not so difference was seen between urban and rural students. During COVID-19 pandemic, students intended to do job to help their family as many parents lost their job. To improve the better lifestyle and dietary habits Govt. and NGOs may organize school health program that will help to make awareness in the society about the healthy and unhealthy lifestyle and food habits. Health team of school should take some steps to make an effort to create a behavioral change in young students, and create an environment that provides healthy lifestyle for improving public health sector in Bangladesh.

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Conflict of interest

None to declare.

Authors' contribution

Ahsan Habib Sunny and Muhammad Sakib Ibtidha Chowdhury - collected and organized the data with draft analysis and prepared the draft manuscript, and Mohammad Ohid Ullah developed the idea, finalized the data analysis and manuscript. All authors have read and approved the final manuscript.

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