

Survey on Overall Health Conditions of University Students in Dhaka

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Abstract—A cross-sectional study was intended to calculate and associate the eating habits and lifestyle risk factors among 716 undergraduate students aged 19 to 55 of one of the private universities in Dhaka, Bangladesh. A questionnaire form was distributed amongst the students to detect the eating habits (number of meals, place of consuming, type of meal, foodstuffs), lifestyle factors (smoking, drug use, physical activity), and health status between university students. It has been calculated from data that height and weight are significantly weakly correlated. In addition there is substantial correlation between gender and smoking habit. Smokers have an addiction of taking recreational drugs, present illness with water condition and past illness. However, there are no significant correlation between smoking habit and allergic to smoke/dust, living place and financial support, breakfast and lunch sources with taking fast food, regular health check-up and giving Polio vaccine. Although there is no substantial correlation between regular health check-up and giving polio vaccines, regular health check-up shows a significant relation alongside the purpose of giving BCG, DPT, Measles, Hepatitis B vaccines. A significant correlation exist between giving the vaccines BCG with DPT, Polio, Measles, Hepatitis B and between giving the vaccines Measles and Hepatitis B.

Keywords— Risk factors; healthy living; food habits; personal habits; health status.

I. INTRODUCTION

Being health conscious and implementing it are very important aspects for a happy and fruitful lifestyle. Teenage physical activity and food practices are a vital anxiety in the present enhanced nutrition changeover [1]. Healthy food choices alongside regular physical activity help to prevent a variety of chronic diseases such as obesity, high blood pressure, high blood cholesterol, diabetes, heart disease and certain cancers [2-4]. The main types of adolescents' eating outlines comprise of snacking, skipping breakfast, dieting and implementation of particular diets [5]. It is vital to develop a healthy eating practice in childhood and teenage years. Rapid physical growth creates an increased demand for nutrients and energy [6]. Eating healthy reduces risk in young generation for obesity, iron deficiency anaemia, eating disorders and dental caries. It may also reduce long-term health difficulties, like Congenital Heart Defects, cancer, stroke, hypertension and osteoporosis [7, 8]. In addition, behaviour patterns acquired during childhood and adolescence are likely to imprint into adulthood [9, 10].

As physical exercise is essential for healthy lifestyle, a study was conducted to demonstrate that exercising practice can be dependably calculated, can experimentally be differentiated from earlier incidence of exercising, and can therefore be accepted as a significant measure [11]. To describe the development as an indicator assessment of nourishing eating lifestyle with teenagers, 1822 teenagers of 13 to 16 years of age took part in the study and they came from seven different secondary schools, the north-west of England. The checklist consisting of 23 items were authenticated using methods of nutrition knowledge, dietary intake of fibre and fat, fruit and vegetable consumption, calculation of family income, and dietary restraint [12].

To survey how dietary consumption differs with age in a country-wide sample of grown-up Norwegian women and to assess the effect of lifestyle and socio-economic condition on important dietary aspects, a cross-section study was conducted. A food frequency questionnaire was mailed to a random, nation-wide sample of 20,000 women aged 45 to 69 years, and 9885 questionnaires were accepted for nutritional analyses. Older women incline to have a healthier diet than younger women [13].

To evaluate observance to healthy lifestyle practices in grown-ups from 1988 to 2006 in USA, an investigation of obedience to 5 healthy lifestyle tendencies [5 fruits and vegetables/day, 12 times/month exercise regularly, healthy weight maintenance (body mass index 18.5-29.9 kg/m²), moderate alcohol consumption and not smoking] in the National Health and Nutrition Examination Survey 1988-1994 were associated with outcomes from the same type of survey done from years 2001-2006 among adults aged 40-74 years. Results of these 18 years show that observance to a healthy lifestyle pattern has reduced, with reduction recorded in 3 of 5 healthy lifestyle practices [14].

To determine the occurrence of implementing a nourishing lifestyle (regular exercising, daily five or more fruits and vegetables, BMI 18.5-29.9 kg/m², not smoking) in a middle-aged group, and determine the percentages of cardiovascular ailment and death amongst the people who embrace a nourishing lifestyle. Results show that people who newly adopt a healthy lifestyle in middle-age see a speedy lower degrees of cardiovascular ailment and death [15]. Data were assembled from a sample of the population aged 6 to 79 years living in private families at the time of the survey. Sample excluded persons from Crown lands, institutions and certain remote regions, Indian Reserves inhabitants, and full-time Canadian Forces members. Around 96% of Canadians were

signified in this study. The Canadian Health Measures Survey collected time-sequenced data on physical activity and sedentary behaviour for a sample that included children and teenagers aged 6 to 19 years. Results show that physical pursuits are less having six hours out of ten waking hours dedicated to inactive activities. Persistence of these lifestyle selections amongst persons of these age range could accelerate the commencement and expansion of prolonged illnesses [16].

From three accepted eating surveys 48 dietary items were collected from a large group sample. Results show that self-reporting practices were associated with gender and age, older participants eating more fibre than younger ones, and women have avoidance of fats from meats than men [17].

A total of 5200 students of grade 5 were surveyed in 2003 along with their parents and school principals. Height and weight were measured, dietary intake was assessed, physical and sedentary activities were collected. Excess body weight, diet, physical activity were compared across schools with and without nutrition programs using multivariate methods, while adjusting for gender and socioeconomic characteristics of parents and residential neighbourhoods. Results show that students from schools participating in a synchronized plan that assimilated endorsements for school-based healthy eating plans displayed considerably lesser proportions of overweight and obesity, had healthier diets, and reported more physical activities than students from schools without nutrition plans [18].

Another study was performed to associate the awareness and performances concerning healthy lifestyle among 350 students of 17-24 years of ages in 3 medical and 3 non-medical institutions of Karachi, Pakistan. There was no difference between the awareness of medical and non-medical students concerning stress due to work. In both types of groups, time limitation was mentioned as the highest reason for avoiding meals and regular exercise. Results show that greater understanding regarding healthy lifestyle does not essentially result into better practices [19].

The purpose of this report was to assess day-to-day list of food options at students' restaurants and dietary practices and health-related performance of 2075 Croatian university students corresponding to gender. Breakfast was the frequently avoided meal. Cereals, red meat and fast food were consumed frequently by male students. Whole grain foods, low-fat dairy foods and breakfast cereals were consumed frequently by female students. The most common choice for snacks was fruit. Male students did physical exercise more than female students (4.4 h/week male, 1.6 h/week female). Female students (29.8%) smoked cigarettes in higher proportion than male students (17.2%). Results show that 88.9% male students consumed alcohol, while for females it is 84.8%. Of the total students, 80.4% were satisfactorily nurtured. This report displayed that meals provided at students' restaurants are adequate [20].

To understand the food practices and physical activity arrangements and to explore the association with socio-demographic aspects, a cross-sectional analysis was performed of grades 6, 8, 10 and 12 amongst Palestinian teenagers. A number of 8885 students were comprised in this study: 53%

from the West Bank and 47% from the Gaza Strip. This showed that there are difficulties with Palestinian teenagers' diet, eating, and physical performance [21].

This study portrays a self-administered food frequency questionnaire intended to evaluate semi-quantitatively food practices of teenagers, and weighs its use in a survey of lifestyle and physical activity. A questionnaire was created and assessed in 20 teenagers and contrasted with an adjusted type of the diet history technique (a 3-day diet report and with a dietician interview). This validated questionnaire was modified and used in a study of 3540 teenagers aged 9–19 years. This questionnaire appropriately portrays food consumption in teenagers. Furthermore, it was well accepted by the target group, easily understood and completed with very few problems. The outcomes depict that an extensive number of teenagers did not drink milk, eat fruit and vegetable daily [22].

The purpose of the survey was to inspect the links between smoking addictions, dietary practices, physical exercise and body mass index in Norway in 1997–1999. The study was cross-sectional. Smoking addictions, eating chosen foods and physical exercise data were assembled by questionnaire whereas height and weight of body were measured in 59361 subjects of ages 40–42 years in 11 Norwegian counties. The survey showed that those who do not smoke had healthier eating practices and greater physical activity than smokers, while the occurrence of obesity was lesser in smokers. In addition, there were substantial gender dissimilarities, and eating practices of female smokers' and male non-smokers' has same level of healthiness [23].

The overall healthy life style has not been well studied in relation to health consciousness, dietary habits, actual food intake, physical activity, health history and awareness simultaneously. Not much research has been performed on healthy lifestyle factors for Bangladeshi University students. Therefore, it is important to monitor the trends in health behaviour among young people to understand the features that might influence the development of their health behaviour. It is vital to recognize the risk factors that influence healthy life style. Therefore, by conducting an epidemiological survey on the health condition of students, this would benefit them to upgrade their health and living conditions and lead a healthy lifestyle. Also advice and recommendation can be given for the improvement of the students' health conditions which will ultimately be beneficial to our nation. This would be a very important research.

This research was aimed at conducting a study on the overall health conditions of the students of one of the private universities in Dhaka, Bangladesh. The objective of this study was to display the relationship of risk factors with health among students of that University and identify the influential factors responsible for healthy living. The objective of this study was to achieve understanding in nutritional knowledge, dietary habits, life style, and health consciousness of University level students. The purpose of the present study was to report on the prevalence of physical activity, dietary habits and medical status among Bangladeshi University students and to examine the interrelationships among these

factors using representative samples drawn from various disciplines of a private University at Dhaka.

II. METHODS

This cross-sectional study was intended to assess and associate the eating habits and lifestyle risk factors among the undergraduate students of the private University Bangladesh. A sample comprised of total 716 University students (males and females) aged 19 to 55 years with a mean age of 22 years, living in Dhaka area, Bangladesh. This survey was taken in year 2014 to 2015 across various departments of the University. This study was approved/permitted by the University authority and questionnaires were sent through the University medical officer along with the chairmen of each departments to be circulated and completed by the students directed by faculties in classes. The questionnaires were given to students in lectures with oral instructions and they completed it by themselves. It took about 20 minutes to accomplish the survey. All students volunteered for this study. It was informed to the students that their contribution is voluntary, their information would only be used for research purposes. It was also written in the questionnaire forms that their personal identity and information would remain confidential.

To detect the eating habits (number of meals, place of consuming, type of meal, foodstuffs), lifestyle factors (smoking, drug use, physical activity), health status between University students a self-administered questionnaire was used. The questionnaire had four sections as follows:-

1. *General and Personal Information:* This first part of the survey consisted of questions regarding to age, gender, height, and body weight of subjects. To define nutritive status, self-reported weight and height were used for computing the body mass index (BMI). BMI was calculated as weight (kg)/height squared (m^2). National Institutes of Health gives standards for various weights: underweight in persons of 18 years and greater age is defined as BMI $<18.5 \text{ kg}/m^2$, normal weight as BMI $18.5\text{--}24.9 \text{ kg}/m^2$, overweight as BMI $25.0\text{--}29.9 \text{ kg}/m^2$ and obesity as BMI $\geq 30.0 \text{ kg}/m^2$. This section also consists of questions about the department the student is studying, the degree pursuing (undergraduate, graduate, post-graduate), living place (with family/hostel/mess), number of years stayed (rural areas, urban areas), and financial support (Self/parents/both).

2. *Personal Habits:* The second portion of the questionnaire included questions about physical activity, smoking and allergic information. Exercise was appraised by asking participants if they exercise or if they are regular or irregular in exercising. Students were inquired regarding their smoking habit and if so then how many per day (1-5, >5 , >10 and >20 cigarettes). Students were also inquired about their probable use of smokeless tobacco and recreational drugs in this section. In addition, whether they were allergenic to smoke or dust and if so, then whether they take preventive measures or not were included in the questions. There were questions regarding wearing silk or synthetic clothes, as these can cause discomfort in various weathers and if the person has allergies. Again, questions were included regarding if they washed their

foods (fruit/vegetables/fish) properly before eating or cooking. At the end, questions were given regarding modern amenities at home. To investigate whether their health might have been affected due to the Electromagnetic Fields emitted from various modern electrical and electronic amenities, questions were included if they have modern amenities like microwave oven, cell phone, TV, CRT computer, hair dryer and other types.

3. *Food habit:* The third part of the questionnaire included food frequency of typical food items, their general eating habits, drinking water purity. Students were questioned about the sources of their main foods: breakfast, lunch and dinner and the place where they consumed their meals (at home with family, in students' hostels/mess/hotels or combination of those places), number of meals/per day. The questions were included about their consumption of fast food frequency (never/often/very often) and also their drinking of fizzy (soft) drinks (never/often/very often). Students were also given questions regarding how they take drinking water, whether it was treated, untreated or they do not have proper knowledge about it. Also, how many litres per day they consume water (>1 litre, > 1.5 litres, > 2 litres). Students were also inquired about the frequency of including fruits, vegetables, meat, milk/dairy products in their meals per week (0, 1, 2, 3 times).

4. *Health Status:* This fourth part of the questionnaire deals with medical history of the students and their families, as well as their physical health status and doctor visits. Questions were included regarding if they have any present illnesses, past illness, and any chronic disease they might suffer for a long period. Also, they were inquired regarding their family illness (the illness runs in your family: Diabetes / Blood Pressure / Heart Disease / Any genetic disease). If the students have any abnormality was also included in the form. They were asked if they are regular for doctor check-ups and any vaccines they have taken since their birth to prevent diseases (BCG, DPT, Polio, Measles, and Hepatitis B).

III. RESULTS

In this study, information is collected from 716 students. Among these students, number of male students (519) outnumbered the female students (192) and more ones' birth place were Dhaka (46.5%) (Table I). Besides, average height of the students was 1.66 m and weight was 61.34 kg. From table I, it can be observed that large number of students loved to live with their family (62%) and maximum (53.9%) fulfil their financial support by their parents. In this work 67.2% students were Under Graduate and large number of the pupil maximum time of their life stayed in urban areas (21.5%) than in rural area (13.2%). Interestingly, about 85% students were non-smoker (table I) and among 13.7% students, 6.4% smoked daily 1-5 cigarettes, and about 4% students smoked more than 5 cigarettes per day. But, most of them (87.7%) were using tobacco without taking recreational drugs (3.1%). There were 33% students were not allergenic to smoking and the number of don't taking preventive measures was 30.3%.

Figure 1 illustrates that maximum belongs to the range of 20-25 ages (515) and IS, LLB, EEE departments are showed more popular by students than other departments.

TABLE I. Prevalence information of students related to demographic characteristics and smoking habits.

Variable name	n (%)	
Sex of the person	Male	519 (72.5)
	Female	192 (26.8)
place of birth	Dhaka	333 (46.5)
	Abroad	4 (0.6)
Living place	With family	372 (62.0)
	Hostel	38 (6.3)
	Mess	189 (31.5)
Financial support	Parents	386 (53.9)
	Parents & self	71 (9.9)
Degree of the person	Under Graduate	481 (67.2)
	Post Graduate	22 (3.1)
Number of years stayed in urban areas	Maximum	54 (21.5)
	Minimum	0 (0)
Number of years stayed in rural areas	Maximum	33 (13.2)
	Minimum	0 (0)
Smoking habit	No	609 (85.1)
	Yes	98 (13.7)
Number of cigarettes per day	1-5	46 (6.4)
	>5	28 (3.9)
	>10	23 (3.2)
	>20	3 (0.4)
Use of smokeless tobacco	Yes	24 (3.4)
	No	628 (87.7)
Habit of taking recreational drugs	Yes	22 (3.1)
	No	448 (62.6)
Allergic to smoke/dust	Yes	236 (33.0)
	No	392 (54.7)
Take preventive measure	Yes	177 (24.7)
	No	217 (30.3)

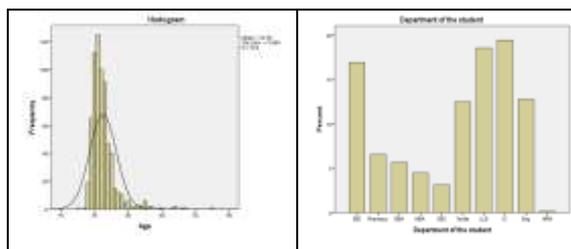


Fig. 1. Prevalence number of students according to age and departments.

Table II gives the information that a large number of people had modern electronic amenities (554) where 67.5% and 63.3% students did not have Microwave oven and TV facilities respectively. While cell phone was using by 404 students, computer, hair dryer and other things are using by 227, 89, 97 students successively. Most importantly only 16.6% students have habit of taking exercise, though a bulk of the numbers were aware of washing fruit/vegetables/fish properly before eating/cooking and prefer to wear silk/synthetic clothes (78.2%). It is seen that 43.6% and 46.6% of students like to take fizzy drinks and fast food often respectively. Not only that there is 40.9% Of students opt to drink water more than 2 litre per day.

According to the table III, for most of the students, home is the main source of taking food in breakfast (46.8%), lunch (44%) and dinner (52.1%). A further point is that a greater proportion of students, about 27% to 38%, try to include vegetables, fruits, meat and milk once per week in their meal.

TABLE II. Frequency of students having various amenities.

Variable name	n (%)	
Having modern Electronic amenities	Yes	554 (77.4)
	No	149 (20.8)
Microwave oven amenities	Yes	229 (32.0)
	No	483 (67.5)
Cell phone amenities	Yes	404 (56.4)
	No	309 (43.2)
TV amenities	Yes	257 (35.9)
	No	453 (63.3)
CRT Computer amenities	Yes	227 (31.7)
	No	486 (67.9)
Hair dryer amenities	Yes	89 (12.4)
	No	623 (87.0)
Others amenities	Yes	98 (13.7)
	No	614 (85.8)
Wear of silk/synthetic clothes	Yes	339 (47.3)
	No	278 (38.8)
Wash of fruits, vegetables, fish properly before eating/cooking	Yes	560 (78.2)
	No	30 (4.2)
Habit of exercise	Yes	119 (16.6)
	No	145 (20.3)
	regular	165 (23)
	irregular	244 (34.1)

Table IV gives illness information of the students. The students gave information about their present illness that they were aware of (0.1% Hepatitis & acidity), any chronic disease suffered from a long time (0.3% pox), and past illness of suffering (only 0.1% kidney). Also, students gave information regarding illnesses that runs in the family (Diabetes 29.7%, blood pressure 33.0%, heart disease 13.5%, any genetic disease 8.5%).

TABLE III. Number of students having foods.

Variables	n (%)	
Sources of main food (Breakfast)	Home	335 (46.8)
	Hostel	32 (4.5)
	mess	123 (17.2)
	Hotels	86 (12.0)
Sources of lunch	Home	315 (44.0)
	Hostel	44 (6.1)
	Mess	171 (23.9)
	Hotels	73 (10.2)
Sources of Dinner	Home	373 (52.1)
	Hostel	33 (4.6)
	Mess	175 (24.4)
	Hotels	6 (0.8)
Times of included vegetables in meal per week	0	25 (3.5)
	1	198 (27.7)
	2	261 (36.5)
	3	175 (24.4)
Times of included fruits in meal per week	0	73 (10.2)
	1	271 (37.8)
	2	221 (30.9)
	3	89 (12.4)
Times of included meat in meal per week	0	43 (6.0)
	1	233 (32.5)
	2	232 (32.4)
	3	146 (20.4)
Times of included milk and milk products in meal per week	0	149 (20.8)
	1	269 (37.6)
	2	138 (19.3)
	3	95 (13.3)

In addition, 2.4% students had physical abnormality. The students also mentioned about whether they go for regular

health check-up (20.5% yes), students gave vaccines (BCG 26.5%, DPT 25.1%, Polio 63.3%, Measles 21.1%, and Hepatitis B 39.1%). It is clear from the table IV that maximum students were free from past and present illness as well as from any sorts of chronic diseases. One of the striking features is that diabetes (29.7%), blood pressure (33%), heart disease (13.5%), and genetic disease (8.5%) are running in their family. Besides, the large numbers have no physical abnormality and no caring about health checking. There is, however, a lowest in percentage of giving the vaccines of BCG, DPT, Measles, and Hepatitis B, while Polio was given by the most of students (63.3%).

TABLE IV. Number of students with illness related information.

Variable		n(%)
Present illness that you are aware of	No	178 (24.9)
	Hepatitis, acidity	1 (0.1)
Any chronic disease suffer from a long time	No	198 (27.7)
	pox	2 (0.3)
Past illness of suffering	No	132 (18.4)
	kidney	1 (0.1)
Illness run in the family "Diabetes"	Yes	213 (29.7)
	No	498 (69.6)
Illness run in the family "Blood pressure"	Yes	236 (33.0)
	No	477 (66.6)
Illness run in the family "Heart Disease"	Not known	4 (0.6)
	Yes	97 (13.5)
	No	611 (85.3)
Illness run in the family "Any genetic disease"	Yes	61 (8.5)
	No	646 (90.2)
Physical abnormality	Yes	17 (2.4)
	No	265 (37.0)
Go for regular health checkup	Yes	147 (20.5)
	No	525 (73.3)
Give the vaccines BCG	Yes	190 (26.5)
	No	524 (73.2)
Give the vaccines DPT	Yes	180 (25.1)
	No	534 (74.6)
Give the vaccines Polio	Yes	453 (63.3)
	No	261 (36.5)
Give the vaccines Measles	Yes	151 (21.1)
	No	562 (78.5)
Give the vaccines Hepatitis B	Yes	280 (39.1)
	No	434 (60.6)

Table V gives interrelationship among various factors. It has been calculated from data that average height of the student is 65.20 inches and weight is 61.34 kg, here height and weight are significantly weakly (0.245) correlated. In addition to this there is a substantial association between sex of the person and smoking habit. Not only that from table it can be observed that who are inclined to smoking have an addiction of taking recreational drugs, Present illness with water condition and Past illness.

There are, however, no significant correlation between smoking habit and allergic to smoke/dust, living place and financial support, sources of breakfast and lunch with habit of taking fast food, regular health check-up and Give the vaccines Polio.

Furthermore, though there is no substantial correlation between regular health check-up and giving polio vaccines, but regular health check-up shows a significant relation beside the intention of giving BCG, DPT, Measles, Hepatitis B

vaccines. Likewise, a significant correlation exist between giving the trend of vaccines BCG with DPT, Polio, Measles, Hepatitis B and between giving the vaccines Measles and Hepatitis B.

TABLE V. Interrelationship among various factors.

Variables	P value
Correlation of height and weight	0.000
Sex of the person and Smoking habit	0.000
Living place and Financial support	0.597
Smoking habit and Habit of taking recreational drugs	0.011
Smoking habit and Allergic to smoke/dust	0.104
Sources of Breakfast and habit of taking fast food	0.736
Sources of lunch and habit of taking fast food	0.789
water condition and Present illness that you are aware of	0.008
Present illness that you are aware of and Past illness of suffering	0.000
Go for regular health checkup and Give the vaccines BCG	0.016
Go for regular health checkup and Give the vaccines DPT	0.000
Go for regular health checkup and Give the vaccines Polio	0.436
Go for regular health checkup and Give the vaccines Measles	0.017
Go for regular health checkup and Give the vaccines Hepatitis B	0.000
Give the vaccines BCG and Give the vaccines DPT	0.000
Give the vaccines BCG and Give the vaccines Polio	0.000
Give the vaccines BCG and Give the vaccines Measles	0.000
Give the vaccines BCG and Give the vaccines Hepatitis B	0.001
Give the vaccines Measles and Give the vaccines Hepatitis B	0.000

IV. DISCUSSION

Research works reviewed from various countries around the world (e.g. UK, Finland, Iran, Palestine, Saudi Arabia, Norway, Spain etc.) as mentioned in the introduction section shows healthy lifestyle processes. It is found to differ according to the socio economic status, and environmental factors also contribute. Therefore, the survey performed in Bangladesh also would differ from all other countries due to its variation in environmental settings.

In this study, a total of 716 students of age about 18 to 28 years were selected concerning nutrition and the physical activity of the subjects. Among the students, male students (73%) were considerably higher than female students (27%). Results show that the average BMI of students was 22.37 kg/m² and habit of exercise whether regular or irregular was significantly higher with about 80%. Most importantly, about 50% students liked to take often fast food and fizzy drinking water. Not only that, approximately 80% students took vegetables, meat, fruit and milk at least twice per week. It is a matter of concern that one third students suffered by typhoid as well as at present 22.1% students suffer from typhoid also. On top of it, maximum number of students (73.3%) were not interested to go for regular check-up; as a consequence a large numbers among them did not give vaccines of BCG (73.4%), DPT (74.8%), measles (78.8%), and hepatitis B (60.6%).

The World Health Organization (WHO) defined health in its broader sense in its 1948 constitution as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". From this definition it can be observed that health has three dimensions – physical, mental and social – which are interrelated and influence each other significantly.

Students notably at the undergraduate level in a private university feel stress and anxiety from time to time. However,

when these feelings become pervasive, they can have a devastating effect on their academic performance. This study being a small scale lacks information about the mental state of the students. It would be given precedence in future if any pilot project is considered to be carried out on students with a recommendations to include integrated Health Education aspect in the curriculum.

This research is a starting point of understanding the health awareness amongst students in University levels in Bangladesh. This study can to be extended to more student populations, other age groups and for different parts of Bangladesh to get a comprehensive understanding of health awareness, which should be beneficial to our young generation as well as our country.

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