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Behavioral Risk Factors of Noncommunicable Diseases Among Medical and Nonmedical Undergraduate Students of Dhaka City, Bangladesh

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Abstract

Background and aims: Behavioral risk factors of noncommunicable diseases (NCDs) are established during early age and continued into adulthood. In Bangladesh, the scenario of NCD risk factors among students was inadequately studied. The aim of this study was to assess and compare the prevalence of behavioral risk factors of NCDs between undergraduate medical and nonmedical students.

Methods: This cross-sectional study was conducted among 280 undergraduate students (equal number of students from medical and nonmedical backgrounds). Respondents were selected purposively from 5 purposively-selected institutions. Modified WHO STEPS instrument was used for data collection. Respondents were asked about their behavioral risk factors (tobacco use, insufficient fruit and vegetable intake, inadequate physical activity, and alcohol consumption) by face-to-face interviews.

Results: Men students were more in both groups. The mean age of the medical and nonmedical students was 22.1±2.0 and 21.8±1.9 years, respectively. Tobacco use was more among nonmedical students than that among the counterpart (22.1% vs. 15.7%). Medical students were more used to take insufficient fruits and vegetables compared to nonmedical students (97.9% vs. 93.6%). Equal proportions (71.4%) of students in both groups were used to perform inadequate physical activity. Alcohol consumption was observed more among nonmedical students (12.9% vs. 8.6%).

Conclusion: Behavioral risk factors of NCDs were remarkable among students of both groups, mainly among nonmedical students.

Keywords: Behavioral risk factors, Noncommunicable diseases, Undergraduate students, Bangladesh

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Introduction

Noncommunicable diseases (NCDs), mainly cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes significantly dominate the global burden of diseases including 71% of global deaths. NCD-induced premature deaths (reflecting 80% deaths) are spread mainly among low- and middle- income countries like Bangladesh.[1,2] Nearly seven in every ten (67%) individuals of this country are dying from NCDs and individuals have 22% risk of premature death from target NCDs.[2]

The behavioral risk factors, mainly- tobacco use, inadequate physical activity, the harmful use of alcohol, unhealthy diets, and excessive dietary salt intake are considered as the root contributors for these NCDs.[1] In Bangladesh, higher prevalence has been reported for these risk factors, mainly, 44% tobacco use, 93% inadequate fruit and vegetables consumption, and 38% low physical activity.[3] Moreover, 72% of the people are habituated to using added salt during their meal,[4] whereas this habit is significantly higher among nonmedical students than medical students (71% vs. 57%).[5]

Moreover, evidence has reported that the practice of behavioral risk factors in the early ages of life also persists into adulthood ultimately.[6] Therefore, it is highly important to explore these risk factors in early stage of life to take necessary actions earlier to reduce the future disease burden. The students at undergraduate level can be considered as ideal young adults in the given context. However, there was no such kind of data reflecting the extent of behavioral risk factors of NCDs particularly among the Bangladeshi undergraduate medical and nonmedical students. Therefore, the aim of this study was to assess the prevalence of behavioral risk factors of NCDs among undergraduate Bangladeshi medical and nonmedical students and also to compare the findings to understand how these risk factors are varied among them. The findings of this study would be helpful in order to insight the vulnerability of development of NCDs among them in future as well as realizing the necessity of taking appropriate approaches to reduce future burden for the nation.

Methods

Study Design and Setting

This cross-sectional study was conducted in Dhaka city, Bangladesh, in 2016 among 280 medical and non-medical undergraduate students (equal number in each group). Medical students were from MBBS (Bachelor of Medicine and Bachelor of Surgery) and physiotherapy background, whereas nonmedical students were from business, law, engineering, and pharmacy backgrounds. MBBS students were recruited from Shaheed Suhrawardy Medical College (ShSMC), physiotherapy students were from State College of Health Sciences (SCHS), and nonmedical students were recruited from State University of Bangladesh (SUB), University of Development Alternative (UODA), and Institute of Science and Technology (IST). ShSMC is one of the three medical colleges in Dhaka city run by government, whereas other institutions are private. All of the institutions were selected purposively considering the academic programs run by the institutions and also their location as proximity to each other. The respondents were also selected purposively based on their academic backgrounds. Data were collected from the respondents who were available in their institutions during data collection period.

Data Collection Instrument and Process

A semi-structured questionnaire was adopted from WHO STEPS questionnaire with necessary modifications. The questionnaire comprised of socio-demographic factors (independent variables) such as sex, age, academic year of graduation and monthly family income, and the major behavioral risk factors of NCDs (dependent variables) such as tobacco use, insufficient fruit and vegetables intake, inadequate physical activity, and alcohol consumption. Data were collected by face-to-face interviews. Fruit and vegetables intake was considered insufficient when it was <5 servings/day (according to WHO recommendations), which was assessed by using serving size show-cards of WHO STEPS instrument. Level of physical activity was determined inadequate when the respondent's involvement in moderate-to-vigorous intensity physical activity was <150 min/wk (according to WHO recommendations).

Data Management and Analysis

Data were checked carefully and analyzed by SPSS version 21.0. Descriptive statistics was used to illustrate the socio-demographic factors as well as NCD risk factors, and comparative statistics (chi-square test) was used to illustrate the significant difference between the study groups.

Results

Men students were more in both of the groups. The mean age of overall respondents was 22.0±2.0 years (medical, 22.1±2.0; nonmedical, 21.8±1.9), and the number of students at fourth and third academic year were more in medical and nonmedical groups, respectively (Table 1).

One in every 5 (18.9%) students was tobacco user (all were used smoking tobacco), and nonmedical students were more habituated to smoking tobacco than the counterpart

Table 1. Distribution of the Respondents According to Their Socio-demographic Factors (n = 280)

Factors	Overall Students No. (%)	Nonmedical Students No. (%)	Medical Students No. (%)
Sex of the respondents			
Male	173 (61.8)	83 (59.3)	90 (64.3)
Female	107 (38.2)	57 (40.7)	50 (35.7)
Age (y)			
< 20	23 (8.2)	12 (8.6)	11 (7.9)
20 - 24	215 (76.8)	111 (79.3)	104 (74.3)
25 - 29	42 (15.0)	17 (12.1)	25 (17.9)
Academic year of graduation study			
1st year	41 (14.6)	19 (13.6)	22 (15.7)
2nd year	46 (16.4)	21 (15.0)	25 (17.9)
3rd year	96 (34.3)	57 (40.7)	39 (27.9)
4th year	97 (34.6)	43 (30.7)	54 (38.6)
Monthly income (BDT)[a]			
<30 000	77 (27.5)	28 (20.0)	49 (35.0)
30 000 to 50 000	170 (60.7)	93 (66.4)	77 (55.0)
>50 000	33 (11.8)	19 (13.6)	14 (10.0)

[a] BDT = Bangladeshi Taka (currency).

($P = 0.222$). A very high prevalence (95.7%) of insufficient fruit and vegetable intake was found among the overall students, and it was little more among the medical students ($P = 0.137$). Five in every 7 (71.4%) students were not used to perform adequate level of physical activity, and the proportions were the same in both groups. One in every 10 (10.7%) students was used to consume alcohol, and nonmedical students were more used to consuming alcohol than the counterpart ($P = 0.334$). However, all of the students were used to consume alcohol occasionally (Table 2).

Our study uncovered the association between NCD risk factors and socio-demographic factors of the respondents. Sex, age, and graduation year were the most commonly found associated factors in both groups (Table 3).

Discussion

Current study was the first representative study from Bangladesh as well as South-East Asian region to describe and compare the behavioral risk factors of NCDs between medical and nonmedical undergraduate students simultaneously. High prevalence of risk factors found in this study indicated how young adult generation of the country is notoriously going to be predisposed to NCD events in their later life.

This study reflected that the prevalence of behavioral risk factors of NCDs were remarkable in both student groups regardless of medical and nonmedical aspects. Moreover, the risk factors were found more among nonmedical students than that among the counterpart except for the insufficient fruit and vegetable intake; however, these variations were not significant ($P > 0.05$). In general, it is expected that the prevalence of behavioral risk factors would be higher among nonmedical students than that among medical

Table 2. Percentage of NCD Risk Factors Among the Respondents (n = 280)

NCD Risk Factors	Overall Both Sexes (Male, Female)	Nonmedical Both Sexes (Male, Female)	Medical Both Sexes (Male, Female)	χ^2 Value	P Value
Tobacco use (smoking)					
Yes	18.9 (98.1, 1.9)	22.1 (96.8, 3.2)	15.7 (100, 0)	1.885	0.222
No	81.1 (53.3, 46.7)	77.9 (48.6, 51.4)	84.3 (57.6, 42.4)		
Insufficient fruit and vegetables intake					
Yes	95.7 (60.8, 39.2)	93.6 (58.0, 42.0)	97.9 (63.5, 36.5)	3.134	0.137
No	4.3 (83.3, 16.7)	6.4 (77.8, 22.2)	2.1 (100, 0)		
Inadequate physical activity					
Yes	71.4 (56.0, 44.0)	71.4 (54.0, 46.0)	71.4 (58.0, 42.0)	0.0	1.000
No	28.6 (76.3, 23.8)	28.6 (72.5, 27.5)	28.6 (80.0, 20.0)		
Alcohol consumption					
Yes	10.7 (60.0, 40.0)	12.9 (55.6, 44.4)	8.6 (66.7, 33.3)	1.344	0.334
No	89.3(62.0, 38.0)	87.1 (59.8, 40.2)	91.4 (64.1, 35.9)		

Table 3. Relationship Between Socio-demographic Factors of the Respondents and NCD Risk Factors (n=280)

Risk Factors	Overall Students (P Value)				Nonmedical Students (P Value)				Medical Students (P Value)			
	Sex	Age	GY	MI	Sex	Age	GY	MI	Sex	Age	GY	MI
Tobacco use	**<0.001**	**0.003**	**0.017**	0.263	**<0.001**	0.117	0.389	0.418	**<0.001**	**0.005**	**0.006**	0.547
Insufficient fruit and vegetables intake	0.116	0.527	0.210	**0.005**	0.243	0.442	0.051	0.190	0.553	**0.001**	0.090	**0.003**
Inadequate physical activity	**0.002**	**0.013**	**<0.001**	0.317	**0.044**	0.545	**0.011**	0.314	**0.014**	**0.010**	**0.003**	0.721
Alcohol consumption	0.831	0.203	0.957	0.621	0.730	0.422	0.968	0.856	0.857	0.494	0.789	0.661

GY, Graduation year; MI, Monthly income.
P value is obtained from chi-square test. Bold sections represent significant associations.

students considering the healthy practice related better knowledge among medical students due to having medical curriculum. Smoking and alcohol consumption were found compliant regarding this issue in this study. Conversely, a very insufficient level of fruit and vegetable intake among medical students was a concerning matter that might be due to the inappropriate dinning management in their medical hostel, which is needed to be evaluated. Moreover, academic load might be a potential factor among medical students for not being satisfactorily involved in physical activity.

This study showed that the overall students were almost similarly habituated to smoking in terms of prevalence in the national representative sample of Bangladeshi adults (17.1%) .[3] Moreover, medical students of this study were less habituated to smoking than the medical students of Nepal (20.4%),[7] but more than the medical students of Uganda (2.2%).[8] However, tobacco control bodies of Bangladesh have implemented newer strategies to lower the tobacco use, which seemed effective according to the findings of this study. Proportion of insufficient fruit and vegetable intake was more among overall students of this study compared to the Bangladeshi adults (93.3%),[3] and also that proportion was less among the Nepali medical students (85.6%)[7] compared to the medical students of this study. This finding reflected that fruit and vegetable intake was not popularized yet among the students of Bangladesh. Prevalence of

inadequate physical activity was higher in Bangladeshi adults of this study (38.6%)[3] compared to the medical students of Nepal (30.9%).[7] Since this study was conducted in Dhaka city, higher level of inadequate physical activity was very common. Dhaka is one of the most overpopulated cities of the world, hence unplanned urbanization resulted from lack of open space as well as community-based playground. Bangladeshi medical students were used to consuming alcohol less than the medical students of Nepal (50.8%)[7] and Uganda (31.7%).[8] Socio-economic, cultural, and religious aspects play a major role in keeping the population away from alcohol consumption in Bangladesh.

The limitation of the study to mention was that the selection of particular medical and nonmedical students from different universities was not based on a standard stratification. However, the findings of this study would be useful in understanding how the young students of Bangladesh are at risk of NCDs.

Conclusion

Prevalence of behavioral risk factors of NCDs was remarkable among the medical and nonmedical undergraduate students of Bangladesh. Risk factors were found more among nonmedical students in few extents although these were not significant. Health promotional and health educational approaches concentrating life-course perspective of NCDs

prevention are badly needed for both groups.

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