ASSESSMENT OF NUTRITIONAL STATUS THROUGH BODY MASS INDEX (BMI) AMONG FIRST YEAR STUDENTS OF MBBS & BSC NURSING COURSE OF GOVERNMENT MEDICAL EDUCATION INSTITUTES IN DHAKA

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Abstract

Context: *Adequate knowledge about nutritional status of a community is necessary to have a comprehensive idea about its development process, as under-nutrition is one of the major health problems in developing countries. As an individual's height and weight can be readily and inexpensively measured, body mass index (BMI) has become a popular heuristic approximation for body fatness in epidemiology and clinical practice. The BMI is the most common surrogate measure of obesity as well as nutritional assessment for individual. For this reasons an attempt has been taken to assess the nutritional status through the body mass index (BMI) among first year students of MBBS and B sc nursing course of government medical education institutes in Dhaka.*

Material and Methods: *This descriptive type of analytic study was conducted in the Anatomy Department of Dhaka Medical College, Dhaka. The study sample was 177 individuals of first year students of MBBS and B.Sc nursing course admitted in the session of 2017-2018 in the Dhaka Medical College & Dhaka Nursing College, Dhaka. Body Mass Index (BMI) was calculated as student's weight in kilograms divided by the square of the student's height in meters (kg/m^2). The warning sign of poor nutritional health was calculated according to the checklist adapted by the Nutrition Screening Initiative, American Academy of Family Physicians July 2001. With the help of statistical software SPSS-20 comparisons between the two groups were done.*

Result: *The mean (±SD) height (meter), weight (kg) and BMI of groups MBBS and B Sc nursing were 1.63±0.09, 61.65±11.22, 23.11±3.53 and 1.56±0.07, 49.05±9.42, 20.15±3.47 respectively. Good nutritional health status was found 61.80% in MBBS and 53.30% in B Sc nursing groups.*

Conclusion: *The present study showed that the BMI of first year students of MBBS course is higher than first year students of B Sc nursing course.*

Key words : *BMI, nutritional status, MBBS students, B sc nursing students*

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Introduction:

There are many measures to assess the nutritional status of a population. Body mass index (BMI) is one of them. Anthropometry is considered to be an important tool for assessing nutritional status of individuals or of the community. Hence, measurements like stature, sitting height, weight and indices based on these measurements developed by different scholars have been extensively used to define the extent of malnutrition[1].

Body mass index (BMI) relates weight to height in a normalized index that was ûrst published

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in Quetelet's 18th Century article on 'the average man'___-[2]. Adolphe Quetelet (1796–1874) was a Belgian mathematician, astronomer and statistician, who developed a passionate interest in probability calculus that he applied to study human physical characteristics and social aptitudes. His pioneering cross-sectional studies of human growth led him to conclude that other than the spurts of growth after birth and during puberty, 'the weight increases as the square of the height', known as the Quetelet Index until it was termed the Body Mass Index in 1972 by Ancel Keys (1904–2004)[3].

With the increasing importance of nutritional assessment and obesity detection, it is useful to reevaluate how body fat is determined. For adults, the body mass index (BMI) is commonly used. Its popularity stems in part from its convenience, safety and minimal cost, and its use is widespread, despite not being able to distinguish lean body mass from fat mass[4]. Obesity has been proposed as the most important determinant of metabolic syndrome (characterized by insulin resistance, hypertriglyceriaemia, hypo-HDL-cholesterolaemia, and hypertension), and so it is important to develop simple and reliable anthropo-metric measurement tools for obesity, to facilitate the prevention of metabolic syndrome[5].

Knowledge of the nutritional status of a community is necessary to have a comprehensive idea about its development process, as under-nutrition is one of the major health problems in developing countries[1]. Under nutrition may be due to inadequate nutrient intake, or secondary to infection, injury, chronic disease, or excessive nutrient loss as occurs in chronic diarrhea or some drug therapy[6]. As an individual's height and weight can be readily and inexpensively measured, BMI has become a popular heuristic approximation for body fatness in epidemiology and clinical practice[2]. The body-mass index (BMI) is the most common surrogate measure of obesity as well as nutritional assessment for individual[7]. There was a graded relationship between male socio-economic status (SES), defined as educational status, and BMI when adjusted for background variables, while for females, only a low educational level was associated with a higher BMI[8].

Screening programs for BMI assess the weight status of individual students to identify those at risk and provide parents with information to help them take appropriate action[9]. Facial markers of body composition have been of increasing interest to multiple disciplines, such as evolutionary psychology (e.g., as a marker of attractiveness) and computational face recognition. Since body mass and fat distribution is indicators of various health and live-style aspects, facial cues are likely to influence facial perception and can even be important for forensic purposes[10].

The body mass index (BMI) is the metric currently in use for defining anthropometric height/weight characteristics in adults and for classifying (categorizing) them into groups. The common interpretation is that it represents an index of an individual's fatness. It also is widely used as a risk factor for the development of or the prevalence of several health issues[11]. So far reviewing the different available journals no research paper was found regarding assessment of nutritional status through body mass index among the students of medical science in our country. May be it is the first initiatives to assess nutritional status through BMI in medical science students in Bangladesh.

Materials and Methods:

This descriptive type of analytic study was conducted in the Anatomy Department of Dhaka Medical College, Dhaka from 1st February'2018 to 30th September'2018. The study samples were the first year students of MBBS and B.Sc nursing course admitted in the session of 2017-2018 in the Dhaka Medical College & Dhaka Nursing College, Dhaka. Both institutes are government medical education institute in Dhaka. The data were collected randomly on 177 individuals from first year students of MBBS and BSc nursing course by questionnaires. The study samples were divided into two groups as MBBS and B.Sc nursing.

Table-I
Grouping of the samples.

Group	No.
MBBS	102
B Sc nursing	75

Subjects were not chosen on the basis of bodily structures and proportion. Body Mass Index (BMI) was calculated as student's weight in kilograms divided by the square of the student's height in meters (kg/m^2)[12]. The nutritional statuses of the two groups were categorized according to world health organization (WHO) as follows:

Table-II
Nutritional status[12]

BMI	Nutritional status
Below 18.5	Underweight
18.5–24.9	Normal weight
25.0–29.9	Pre-obesity
30.0–34.9	Obesity class I
35.0–39.9	Obesity class II
Above 40	Obesity class III

The warning sign of poor nutritional health was calculated according to the checklist[13] adapted by the Nutrition Screening Initiative, American Academy of Family Physicians July 2001.

Nutritional health checklist[13]:

	YES
I have an illness or condition that made me change the kind and/or amount of food I eat.	2
I eat fewer than 2 meals per day.	3
I eat few fruits and vegetables, or milk products.	2
I have 3 or more drinks of beer, liquor or wine almost every day.	2
I have tooth or mouth problems that make it hard for me to eat.	2
I don't always have enough money to buy the food I need.	4
I eat alone most of the time.	1
I take 3 or more different prescribed or over-the-counter drugs a day.	1
Without wanting to, I have lost or gained 10 pounds in the last 6 months	2
I am not always physically able to shop, cook and/or feed myself	2
(For each yes answer, score the number listed for the total nutritional score.) TOTAL	

Scoring: 0-2 = Good, recheck in 6 months
3-5 = Moderate nutritional risk, recheck in 3 months.
6 or greater = High nutritional risk, see physician, dietician, etc.

The convenience sampling was performed and written consent was obtained from the participants. The descriptive statistics method was used to categorize information in frequency tables for warning sign of poor nutritional health, as well as students t- test was calculated with the help of statistical software SPSS-20 to find out the significant relation of BMI between the two groups of students.

Results:

The mean (±SD) height (meter), weight (kg) and BMI of groups MBBS and B Sc nursing were 1.63±0.09, 61.65±11.22, 23.11±3.53 and 1.56±0.07, 49.05±9.42, 20.15±3.47 respectively (table-III). It was observed that the differences between the two groups were statically significant ($P<0.001$) in all three variables. Body mass index was significantly higher in MBBS group than B Sc nursing group (table-III, Fig-1).

Good nutritional health status was found 61.80% and 53.30% in MBBS and B Sc nursing groups respectively (table-IV). Moderate nutritional risk was found 27.50% and 32.00%, high nutritional risk was found 10.80% and 14.70% in MBBS and B Sc nursing groups respectively (table-IV, Fig-2). The present study showed that the B Sc nursing students are more at high nutritional risk than the MBBS students.

Table -III

Height, weight and BMI of first year students of MBBS and B.Sc nursing group (n=177).

Group	Height (meter) (Mean±SD)	Weight (kg) (Mean±SD)	BMI (Mean±SD)
MBBS	1.63±0.09	61.65±11.22	23.11±3.53
(n=102)	(1.37-1.83)	(38-98)	(15.88-33.03)
B Sc Nursing	1.56±0.07	49.05±9.42	20.15±3.47
(n=75)	(1.19-1.78)	(34-84)	(14.16-30.82)
P value	<0.001***	<0.001***	<0.001***

Figure in parentheses indicate range. Comparison between groups done by student's 't' test, */**/*** = significant.

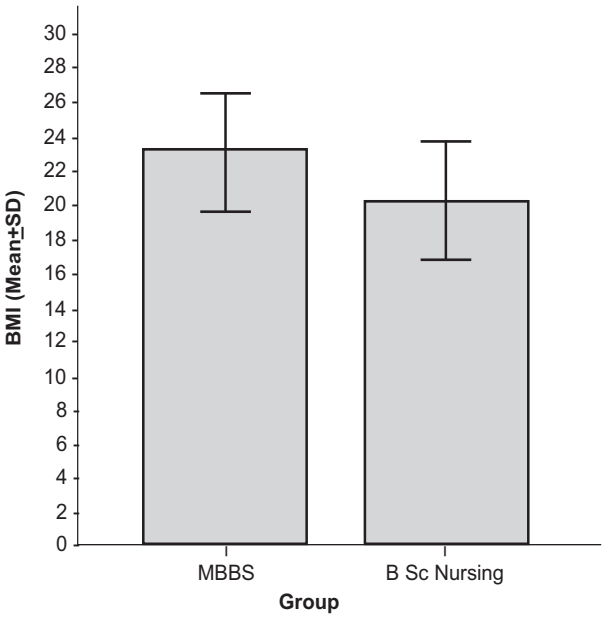

Fig.-1: *Bar diagram showing BMI of first year students of MBBS and B Sc nursing group.*

Table-IV

Nutritional scoring of first year students of MBBS and B.Sc nursing group.

Nutritional score	Group	
	MBBS (n=102) (%)	B.Sc Nursing (n=75) (%)
Good (0-2)	3 (61.80)	40 (53.3)
Moderate nutritional risk (3-5)	28(27.50)	24 (32.0)
High nutritional risk (6 or greater)	11(10.80)	11 (14.7)
Total (N)	102 (100%)	75 (100%)

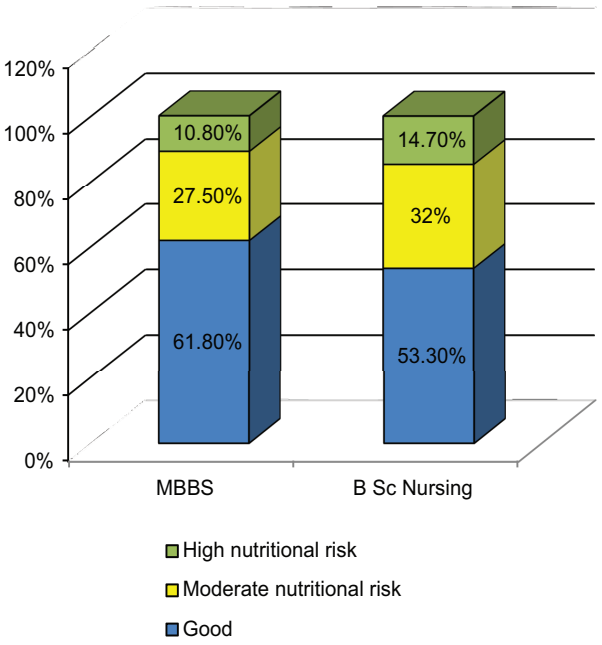

Fig.-2: *Component bar diagram showing nutritional scoring of first year students of MBBS and B.Sc nursing group.*

Discussion

Adult malnutrition is much more widespread than is commonly recognized[14]. Described in this article is the use of body mass index (BMI = weight in kg/height in metres^2) as a measure of adult nutritional status, both in first year students of MBBS and B Sc nursing course in Dhaka Medical College & Dhaka Nursing College, Dhaka. The mean height and weight

was 1.63 meters and 61.65 kg in MBBS group; and 1.56 meters and 49.05 kg in B Sc nursing group respectively (table-III). Body mass index was calculated and it was found higher (23.11>20.15) in MBBS students which was statically significant (P<0.001). It indicates that there is a significant relation between BMI and the students of different courses of medical educations such as MBBS, B sc nursing course etc.

Poor nutritional health is often overlooked. For this reasons, according to the American Academy of Family Physician to determine the nutritional health, a checklist was calculated between the two groups. Moderate nutritional risk was found in 27.50% and 32.00%, high nutritional risk was found in 10.80% and 14.70% in MBBS and B Sc nursing groups respectively (table-IV, Fig-2). It was observed that B Sc nursing students are more (14.70%>10.80%) in high nutritional risk than the MBBS students.

The first year students of MBBS and B Sc nursing course admitted in the Dhaka Medical College & Dhaka Nursing College from the whole country through the competitive admission test examination. It is well known, to admit in the MBBS course the students have to face much greater challenge than the B Sc nursing course. To prove best in the admission test better nutritional health status of the individuals are required. For this reasons an attempt were taken to assess the nutritional status among the 1st year students of MBBS and B Sc nursing course in Dhaka Medical College & Dhaka Nursing College as a government medical institutes in Dhaka through body mass index. It is clear from the above findings that on average the B Sc nursing students has lower height and weight than the MBBS students. Both of the groups, MBBS and B Sc nursing belong to normal BMI range (18.5 to 24.9). Body mass index in MBBS (23.11) group is more than B Sc nursing (20.15) group and it was statically significant (P<0.001).

Limitation

- BMI was calculated to assess the nutritional status. Others anthropometric, clinical, biochemical and dietary methods were not assessed.
- For each of the groups only one institute was chosen to compare, and the study sample was small.

Conclusion

The present study showed that the BMI of students of MBBS course is higher than B Sc nursing course students. At the same time B Sc nursing course students are more in nutritional risk than MBBS course students. The BMI is therefore a useful tool in both clinical and public health practice for assessing adult nutritional status.

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