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Original Article

Assessment of physicians' knowledge to combat obesity in Bangladesh

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ABSTRACT

Objective: Physicians need to play a proactive role to combat obesity and its associated comorbidities. The present survey was conducted to assess the awareness, knowledge, practice and attitude of the physicians in Bangladesh in the prevention and management of obesity.

Methods: Three hundred physicians were randomly selected from a medical university, a government medical college and a private medical college in Bangladesh to be included in this survey. All of them voluntarily participated in the survey upon the assurance of anonymity. All the selected physicians were provided with a questionnaire consisting of nine questions for assessing their awareness, knowledge, practice and attitude regarding obesity.

Results: Out of 300 participants, about 77% claimed that they know their own BMI and BMI cut-off points for overweight and obesity. But 38% physicians were unable to write the cut-off points correctly. Near about 50% physicians claimed that they know the BMI cut-off points for Asian population. However, only 7% were able to correctly write the BMI cut-off points for Asian population. About 47% physicians agreed that they do not calculate BMI or evaluate other measures of body fatness during clinical practice. However, 99% of the physicians considered that measuring BMI during consultation or clinical practice is important.

Conclusions: It may be concluded that Bangladeshi physicians' have positive attitude for managing obesity but their practice is grossly inadequate. Most importantly, knowledge and awareness of the physicians about diagnosis of obesity is very poor.

1. Introduction

Obesity is a state of abnormal or excessive accumulation of fat in the body that may impair health [1]. The incidence and prevalence of overweight and obese conditions are rapidly rising and obesity has reached an epidemic level in many affluent countries [1,2]. The age-standardized global prevalence rate of obesity has increased from 3.2% in 1975 to 10.8% in 2014 in men, and from 6.4% to 14.9% in women [2]. Similarly, the prevalence of overweightedness and obesity in Bangladesh has reached to 17% in 2013 from 7% in 1980, a rise of almost 2.5 folds [3]. Body mass index (BMI) is an easy, simple and reasonably accurate measure of general obesity or body fatness. BMI is calculated by the weight of a person in kilograms divided by the square of his/her height in meters. The standard BMI cut-off points are widely accepted all over the world in which BMI intervals of 18.5–24.9, 25.0–29.9 and $\geq$ 30.0 kg/m^2 are considered for normal weight, overweight and obesity categories, respectively [1]. However, the World Health Organization (WHO) has recommended lowering of BMI cut-off points (BMI 18.5–22.9 for normal weight, 23.0–27.4 for overweight and $\geq$27.5 kg/m^2 for obese persons) for Asian people [4]. This recommendation was considered due to the increased percentage of body fat and higher risk of cardiovascular and metabolic diseases for Asians compared to European whites of same age, sex and BMI [4]. Similar to BMI, waist circumference is a simple measure of abdominal obesity, and both

Abbreviations: BMI, Body mass index; WHO, World Health Organization.

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the International Diabetes Federation and the WHO have recommended lowering of waist circumference cut-off point for Asian men [5].

The American Medical Association has recognized obesity as a disease considering its disastrous consequences on health [6]. Overweight and obesity directly contribute to cardiovascular diseases, insulin resistance, type 2 diabetes mellitus and certain types of cancers [7]. Furthermore, overweight subjects in some populations, including Bangladeshi population, show increased cardiometabolic risk which is statistically equivalent to the risk for obese subjects [8]. Thus the physicians' have very important role to play in the early diagnosis, management and prevention of obesity. The question is whether the physicians in Bangladesh are ready to manage the rising trend of overweight and obesity. It is not clear how many Bangladeshi physicians use any of the measures of obesity in the clinical practice and how many of them are aware of diagnostic cut-off points for simple measures of obesity, like BMI and waist circumference. Thus we conducted this survey to explore the awareness, and knowledge of Bangladeshi physicians about different measures of obesity, importance of using those measures in clinical practice and the cut-off values appropriate for Bangladeshi population.

2. Methods

We randomly selected 300 physicians of both gender to participate in the survey who have already completed their MBBS (Bachelor of Medicine and Surgery) degree. These physicians were selected from a medical university, a government medical college and a private medical college in Bangladesh. All of them voluntarily participated in the survey upon the assurance of anonymity and none refused to answer the survey questions. Personal data such as age, sex, experience, job status, phone number etc. were not collected from the physicians. No link was kept open to track the identity of the physicians participated in the survey. Thus, less than minimal risk was ensured for the survey participants. The study design was approved by the Institutional Review Board, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. All the selected physicians were provided with a questionnaire consisting of nine questions for assessing their awareness, knowledge, practice and attitude regarding the measures of obesity (Table 1). In designing the questionnaire we focused on whether the physicians know their own BMI, whether they know different measures of obesity with the cut-off points and whether they use any of the measures in their clinical practice. Descriptive statistics were used to summarize the responses of the participants to the questions with the help of SPSS version 21.

3. Results

In the survey questionnaire (Table 1), the first question was whether the participants know their own BMI to assess the self awareness of the physicians about obesity. Out of 300 participants, 76.7% responded 'Yes' and the remaining 23.3% responded 'No' (Fig. 1A). Similarly, when the physicians were asked whether they know the BMI cut-off points for overweight and obesity, majority (77.7%) marked 'Yes', but there were 22.3% physicians who marked 'No' (Fig. 1B). Furthermore, when the participants were asked to write the WHO recommended standard BMI cut-off points for overweight and obesity, 38% physicians were unable to write the cut-off points correctly (Fig. 1C). The physicians were then asked whether they know the BMI cut-off points recommended for the Asian population. More than 50% physicians responded that they do not know the BMI cut-off points for the Asian population (Fig. 2A). Notably, when the physicians were requested to write down the cut-off points for overweight and obesity recommended for Asian population, only 7% were able to write the cut-off points correctly (Fig. 2B). More than 50% physicians also responded that they do not know any of the measures of body fatness other than BMI (Fig. 2C). When the physicians were requested to write the name of any of the measures of body fatness other than BMI, two thirds of the physicians failed to recall it (Fig. 3A). However, there were more than 50% physicians who responded that they calculate BMI or evaluate other measures of body fatness of their patients/relatives/friends during clinical practice or informal interaction (Fig. 3B). Finally, measuring BMI during consultation or clinical practice was considered as 'Very important' by about 60 physicians, 'Important' by about 40% physicians and 'Not so important' by less than 1% physicians (Fig. 3C).

4. Discussion

Obesity is rapidly rising all over the world [2,3]. Obesity has been declared as a disease and it contributes to a number of chronic diseases including diabetes, insulin resistance, hypertension, cardiovascular disease and cancer [6,7]. Thus the physicians need to play a proactive role to combat obesity and its associated comorbidities. The present study was conducted to assess the awareness, knowledge, practice and attitude of the physicians in Bangladesh in combating obesity. In this survey, almost all participants (99%) agreed that measuring BMI during clinical practice is important; more than 75% participants responded that they know their own BMI and BMI cut-off points; and about 50% of the participants said that they calculate BMI or other measures of body fatness and they know measures of body fatness other than BMI. However, 38% of

Table 1
Questionnaire for assessing physicians' knowledge about obesity.

Serial No.	Question	Response	
1.	Do you know your BMI?	Yes	No
2.	Do you know the BMI cut-off points for overweight and obesity?	Yes	No
3.	Please write the WHO recommended BMI cut-off point for overweight Please write the WHO recommended BMI cut-off point for obesity		
4.	Do you know the BMI cut-off points for the Asian population?	Yes	No
5.	Please write the BMI cut-off point for overweight condition applicable for Asian population Please write the BMI cut-off point for obesity applicable for Asian population		
6.	Do you know any of the measures of body fatness other than BMI?	Yes	No
7.	Please write the name of any of the measures of body fatness other than BMI		
8.	Do you calculate BMI or any other measures of body fatness of your patients/friends/relatives during consultation or informal interaction?	Yes	No
9.	How much important is it to measure BMI during consultation?	Very important Important Not so important	

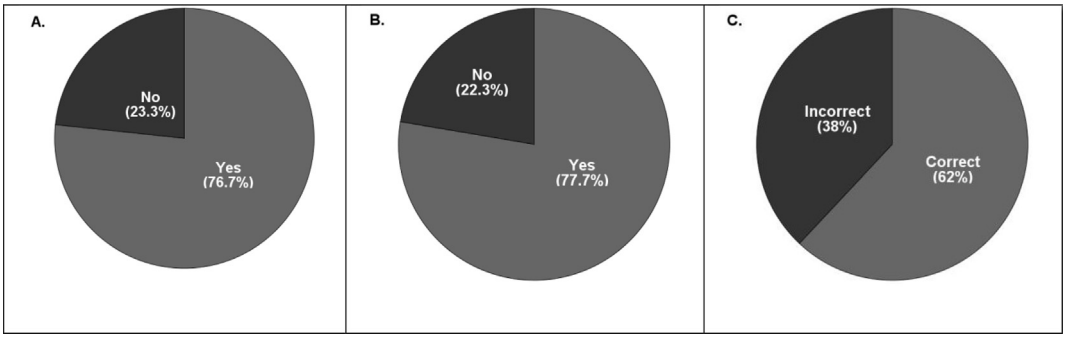

Fig. 1. Awareness and knowledge of physicians about BMI and BMI cut-off points. A. Although majority (77%) of the physicians knows their own BMI, about 23% physicians do not know their BMI. B. Majority (78%) of the physicians responded that they know the BMI cut-off points, but 22% admitted that they do not know the BMI cut-off points. C. Although majority (62%) of the physicians was able to correctly write the BMI cut-off points, there were 38% physicians who failed to recall BMI cut-off points.

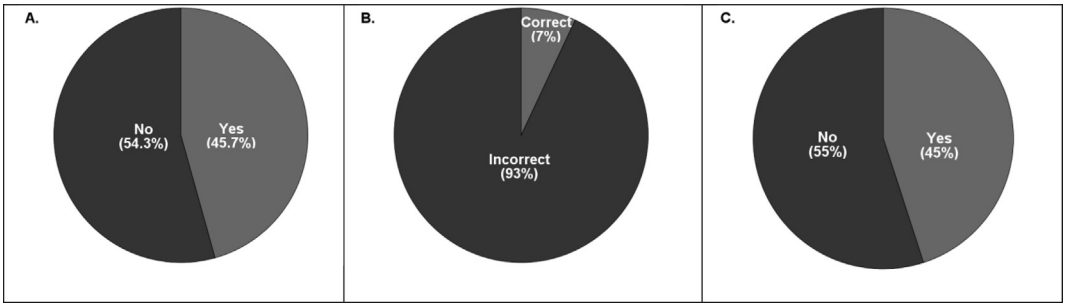

Fig. 2. Knowledge of physicians about BMI cut-off points for Asian population and measures of body fatness other than BMI. A. About 46% physicians responded that they know the BMI cut-off points for the Asian population while the remaining 54% responded that they do not know. B. Only 7% of the physicians were able to correctly write the BMI cut-off points for the Asian population. The remaining 93% of the physicians wrote incorrect values or did not respond to this question. C. Fifty five percent physicians responded that they do not know the measures of body fatness other than BMI.

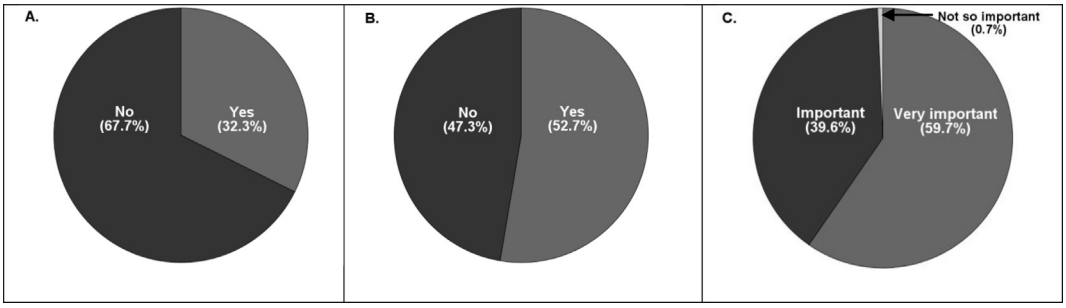

Fig. 3. Knowledge, attitude and practice of physicians about measures of body fatness and BMI. A. About two thirds (67.7%) of the physicians failed to recall any of the measures of body fatness other than BMI. B. Just more than half (53%) of the physicians responded that they calculate BMI or evaluate any other measures of body fatness during clinical practice or informal interaction with patients, relatives or friends. C. About 60% physicians consider that it is 'very important' to measure BMI during clinical practice or consultation while near about 40% consider it as 'important'. Less than 1% physicians consider that measuring BMI during clinical practice is 'not so important'.

the participants were unable to write the standard BMI cut-off points for overweight and obesity. Most remarkably, 93% of the participants were unable to correctly write the BMI cut-off points applicable for Asian population. To the best of our knowledge, we have for the first time identified this huge gap of knowledge among the physicians of Bangladesh regarding obesity.

The finding of the present survey is disappointing considering the rising trend of obesity. However, it is not surprising comparing with the similar surveys conducted in other countries. A gap in understanding obesity among the physicians of the United States of America (USA) was previously reported [9]. Among the Hungarian physicians, only 51% were found aware about the diagnostic cut-off points for obesity [10]. Furthermore, a survey regarding early childhood obesity conducted in 17 Middle and North African countries found that only 25.2% and 46.6% of the physicians are aware of correct cut-off points for overweight and obesity, respectively [11]. Although 62% Bangladeshi physicians were able to correctly state the standard BMI cut-off points in the present study, only 7% were aware about the correct BMI cut-off points recommended for Asian population. One explanation of this lack of knowledge regarding BMI cut-off points for Asian population may be due to the fact that the textbooks used in medical course in Bangladesh are from Europe or from the USA. In these books, ethnicity-specific cut-off points are not presented or rarely presented. However, whatever may the reason, it is very important to know this cut-off points for Asian population and to use it in Bangladesh.

Bangladesh is a developing country in the Southeast Asian

region where adequate food security is not yet ensured for all. More than 20% men and around 25% women are still underweight in Bangladesh (2). The rapidly rising trend of overweight and obesity in Bangladesh where underweight population is still prevalent has its unique psychosocial, cultural and economic basis. Due to poverty, ignorance and lack of (health) education lean and thin persons in this society are usually considered by themselves and by others as having ill health. Thus, in this socioeconomic and cultural setting, many people have a tendency to gain weight by any means, mostly by overconsumption of processed carbohydrates and other unhealthy foods. At the same time, a large group of affluent people, both educated and uneducated, are also getting fatty since they lead a sedentary life and consume unhealthy foods with no regular exercise. The normal weight and underweight people who gain weight many of them eventually enter within the category of overweight and then become obese. Since the BMI cut-off points have been lowered for Asians, many of those who enter in the category of overweight (BMI 23.0–27.4 kg/m2; Asian BMI criteria) are normal weight according to standard BMI classification (BMI <25.0 kg/m2), and thus many of them consider themselves as just healthy or in a state of good health rather than overweight. This consideration is very dangerous as we previously showed that the cardiovascular and metabolic risk of overweight subjects is similar to that of obese subjects in Bangladesh (8). This later finding was obtained categorizing the study subjects using the Asian BMI criteria. Considering the above facts prevailing in Bangladesh, it is very important to detect overweight state as early as possible using Asian BMI criteria and to advise patients how to prevent further gain of weight emphasizing the disastrous health effects of overweight and obesity.

It is well known that physicians can play an important role in the prevention and management of obesity [12,13]. Physicians' direct discussion of their patients' weight status was found to be associated with clinically significant weight loss in the US adults [14]. Unfortunately, as found in the present study, many physicians in Bangladesh do not calculate BMI of their patients and a large number of physicians are not aware of the WHO recommended lower BMI cut-off points for the Asians which should be used for Bangladeshi individuals. Furthermore, many ignorant people have a tendency to gain weight due to the misconception that being heavier is healthier. These facts together preclude people from being diagnosed and advised by their physicians at the very early stage of entering into overweight category. Considering all these facts, physicians in Bangladesh need to be more aware to successfully combat obesity.

The present study has a number of limitations. The sample size is relatively small and not representative of all the physicians of Bangladesh. The survey was conducted in large hospitals associated with medical education and training situated in urban areas. The findings of the present survey could have been worse if physicians in rural areas who have less chance of updating their knowledge were included. Furthermore, no demographic data of the participating physicians were collected in this survey. Therefore, this study was unable to explore the association of physicians' knowledge or awareness with their age, gender, experience or training. Finally, recall bias may also have affected some of the responses of the physicians.

5. Conclusion

Almost 100% of the Bangladeshi physicians who participated in the survey agreed that measuring BMI is important in clinical practice. However, about 47% of them do not calculate BMI, 55% do not know measures of body fatness other than BMI, and 38% and 93% of them do not know standard BMI cut-off points and BMI cut-off points for Asians, respectively. It may be concluded that Bangladeshi physicians' have positive attitude for managing obesity but their practice is grossly inadequate. Most importantly, knowledge of the physicians about diagnosis of obesity is very poor. Based on this conclusion, it may be recommended to revise our undergraduate medical course curriculum by giving emphasis on diagnosis, prevention and management of obesity to improve the knowledge and awareness of our physicians. Adequate emphasis in the medical curriculum should also be given on nutritional science and physical exercise. Continued medical education training programs should update obesity related knowledge of the physicians and encourage them to apply that knowledge in the clinical practice. Our physicians should not ignore overweight status, and should calculate BMI and use Asian BMI criteria to diagnose patients' weight status and advise the patients accordingly. Our policy makers should take necessary measures to educate people about the disastrous consequences of gaining weight. We need a concerted action of common people, health care personnel and policy makers to combat the overweight and obesity-related cardiovascular and metabolic diseases.

Contribution statement

S.R.M., P.K.D., N.M. and S.K.S. conducted survey and collected data. S.K.B., M.A. and M.I.A. conceived, designed and supervised the study. S.K.B. analyzed and interpreted data and wrote the manuscript. S.R.M., M.A. and M.I.A. critically revised the manuscript. All authors read the manuscript and approved the final version. S.K.B. is the guarantor of this work and, as such, has full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Conflicts of interest

The authors declare that they have no conflicts of interest.

Availability of data and materials

All relevant data are included in the paper.

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