

## Original Research Article

# Knowledge of body mass index and its correlates among the patient at a tertiary care hospital

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**Received:** 20 August 2020

**Accepted:** 30 September 2020

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## ABSTRACT

**Background:** In spite of the numerous chronic diseases that have been linked to obesity, studies focusing on awareness regarding Body mass index (BMI) and its correlates to prevent and control obesity are lacking in the literature, especially in developing countries such as India, where obesity is culturally accepted and nurtured in the society.

**Methods:** A cross-sectional prospective survey was done between November 2018 and November 2019 in a tertiary care research institute after approval from institutional ethics committee. A pre-designed questionnaire was used to collect data in excel sheet (Microsoft Corp, Redmond, WA) and analysed using SPSS.

**Results:** total 264 (80.3% urban and 19.7% rural background) patients with mean age of 42 years with different educational level participated in the study. 1.1% patients were underweight, 2.7% mean BMI of studied population was 34.76. BMI distribution curve was bilaterally symmetrical. No one in the study population was well aware of about the BMI and related comorbidities. 98.5% patients confirmed that their doctor had never discussed their BMI with them.

**Conclusion:** There is a significant gap of knowledge among patients regarding obesity and BMI, and physicians also have to take initiatives to discuss about this for primary control of the disease (obesity) and related comorbidities.

**Keywords:** Obesity, BMI, Knowledge, Patient education as topic, Awareness

## INTRODUCTION

Obesity is an epidemic health problem in many developed countries, and it is an emerging public health concern in developing, transitional, and newly developed nations.<sup>1</sup> In countries like India, which are typically known for high prevalence of under nutrition, a significant proportion of overweight and obese people now coexists.<sup>1</sup> Association of obesity with diabetes, hypertension, dyslipidaemia and obstructive sleep apnoea is well known.<sup>2</sup> The most important factor behind obesity and related comorbidities are lifestyle and dietary habits, hence, awareness about the disease plays an important

role in combating the problem.<sup>3</sup> Patient's level of awareness is of utmost value. Community physician can be of crucial value in providing this information, education and communication.<sup>4</sup>

BMI is a standard method of measuring obesity and an accepted quality measure in many health systems.<sup>1</sup> However, little is known about how patient understands the BMI. This study was aimed to know the patient's level of awareness about obesity and BMI. When physicians actively engage patients in a discussion about BMI and weight loss, not only do patients become better informed about their personal health and associated risk

factors, but they also become more motivated to lose weight.<sup>5</sup> Furthermore, with the introduction of online resources to calculate BMI, more patients have become aware of the importance of knowing their BMI. This helps patients to participate in the decision making of their health when seen by a physician. Knowing their own BMI also helps them understand the importance of physical activity and lifestyle changes, and comorbidities associated with obesity.<sup>6</sup> As such, a significant gap exists in terms of obesity awareness, discussion, and implementation of treatment options. Given that, awareness is the pivotal first step in reducing obesity related risks factors.<sup>1</sup>

Obesity is now well recognized as a disease in its own right, one which is largely preventable through changes in lifestyle. This fact, together with its association with the leading causes of illness and death, has made obesity a high priority problem at a global level.<sup>7</sup> Strategies for preventing obesity offer a cost-effective approach in preventing chronic non-communicable diseases. Awareness level is the basic necessity to effect a change in behaviour.

## METHODS

This cross-sectional prospective survey was done in a nutrition clinic of a tertiary care research institute of north India, after approval from institutional ethics committee. The inclusion criterion was all adults over the age of 18 years who were visiting the nutrition clinic. Patients were excluded if they could not effectively communicate in Hindi; had a previously known cognitive impairment that would affect their ability to complete the survey or follow directions (e.g., mental retardation, dementia, psychosis) or had significant visual impairment. There was no penalty for declining to complete the survey. Total 264 patients participated in the survey from November 2018 to November 2019, who were referred from various departments. Participants were informed about the study and their written consent was taken. A pre-designed questionnaire was used to collect data about awareness of obesity, BMI and regarding the discussion with their physician about BMI. All the questions were direct answer question in the form of yes and no. Demographic records like name, age, sex, height, weight, level of education and information about their comorbidities were recorded. Questionnaire was filled by one to one interview between an independent assessor and the participant and data was entered in excel sheet (Microsoft Corp., Redmond, WA) and analysed using SPSS.

## RESULTS

There were 264 participants who responded to the questionnaire, of which, 191 (72.3%) were females with mean age of 42.12 years and 73 (27.7%) were males with mean age of 44 years. The mean age of population under study was 42 years. 212 (80.3%) were from urban area

and 52 (19.7%) were from rural area. 54 (20.5%) were uneducated, 113 (42.8%) were having education up to primary school, 13 (4.9%) had education up to higher secondary level, 42 (15.9%) had education of graduation and postgraduate level. Patient were grouped in BMI categories according to the BMI classification for Indians, 3 (1.1%) were underweight, 7 (2.7%) were normal or lean BMI, 5 (1.9%) were overweight, 249 (94.3%) were obese. Mean BMI of studied population was 34.76, mean BMI of the male population was 32.6 and mean BMI of female population was 35.57. Mean BMI of urban and rural population was 34.51 and 35.77 respectively. BMI distribution curve was bilaterally symmetrical. 52 (19.7%) were suffering for hypertension, 9 (3.4%) from dyslipidaemia, 87 (33%) were diabetic and sleep apnoea was seen in 13 (4.9%) patients only.

When analysing the knowledge among patients, it was found that no one in the study population was aware of their own BMI, 98.9% have not heard about BMI before this survey. 263 (99.6%) were unaware of what the word BMI meant and 100% of population, irrespective of level of education, were unaware of medical concerns related to BMI. 98.5% patients in the study told that their doctor had never discussed their BMI with them.

## DISCUSSION

Obesity is a global phenomenon of the new modern world. Worldwide, obesity has nearly tripled since 1975.<sup>8</sup> According to the WHO's world health statistics report 2012, every one in six adults is obese and it tolls for 2.8 million lives each year globally.<sup>9</sup> In 2016, 39% (more than 1.9 billion) of adults aged 18 years and over were overweight and among these 13% (650 million) were obese. Most of the world's population live in countries where overweight and obesity kills more people than underweight.<sup>8</sup> Obesity is one of the most common, yet among the most neglected public health problems in both developed and developing countries.<sup>10</sup> A number of comorbidities such as type 2 diabetes mellitus, sleep apnoea, stroke, gallbladder disease, osteoarthritis, cardiovascular disease and different types of cancers are associated with obesity. Obesity is the second major preventable cause of cancer after smoking.<sup>10</sup>

Obesity is rapidly increasing in developing countries. In the 21<sup>st</sup> century, India has been following the trend of other developed countries and steadily, obesity has reached up to epidemic proportions, with 5% comprising of morbidly obese population. In 2015, according to an ICMR-INDIAB study, prevalence rate of obesity and central obesity are ranging from 11.8 to 31.3 and 16.9 to 36.3% respectively.<sup>11</sup> In India, more than 135 million individuals are affected by obesity and its prevalence varies state-wise and also among rural and urban population. Urban population and states with high socio-economic status are found to have higher obesity prevalence. These alarming situations necessitate to sensitize the public and policy makers to encounter

obesity through mass awareness programmes to adopt diversified nutritional food and healthy lifestyle to contain the epidemic rise of obesity, because prevention is always better than cure.

This study demonstrated two serious concerns, firstly, lack of understanding of BMI among the patients and secondly, lack of concern among physicians to discuss regarding BMI with their patients, despite being a tertiary care institute of national importance (INI). Patients were frequently unable to identify their own BMI correctly. More than 98% of the patients did not know what medical conditions were related to BMI. Awareness was very low in this study population. Similarly, in a cross-sectional study of 160, type 2 diabetic patients in the outpatient department (OPD) of BIRDEM hospital Bangladesh, it was found that more than 99% were not able to understand meaning of obesity and 88% either told wrong or were not knowing about the method of weight measurement.<sup>12</sup> On the other hand, Nanda et al in his study of improving awareness of patients with obesity and its healthcare at USA, found that more than two-thirds of their cohort was aware of the term BMI. 66% of patients were aware of the health consequence of obesity.<sup>13</sup> A study done in west Virginia and New Jersey, found that about 59.9% of the sample knew that BMI stood for body mass index. Furthermore, 49.9% understood what medical concerns were related to BMI, 60.5% of participants claimed that they had heard of BMI before the survey, 10.8-19.7% reported having discussion about BMI with their physician.<sup>14</sup>

Researchers in the field of lifestyle diseases have conducted many knowledge, attitude and practices (KAP) surveys for major lifestyle diseases such as diabetes, hypertension, metabolic syndrome etc.<sup>15-17</sup> These surveys have found that gap lies in the knowledge and attitude of the individuals, which is even more pronounced in their practice. In a KAP survey from Karachi, it was found that although patients had insight about obesity and intention to lose weight, their practices toward balanced diet and regular physical exercise were inappropriate.<sup>18</sup> Another study done on engineering students in Chennai, India found that 54.16% of students had knowledge that they were moving towards obesity and 36% felt that they were normal despite being obese or over weight and a study on obesity from Bangladesh that involved type 2 diabetic patients reported that majority of participants were lacking proper knowledge about the disease.<sup>19</sup> Majority of them were unaware about ideal body weight, energy requirement and weight measurement techniques.<sup>12</sup> This data clearly showed the difference in level of awareness and attitude between east Asian and western population. These data are of concern because of Asian Indian genetic phenotype.<sup>20,21</sup> People of these countries are at more risk than western counterpart because of YY effect.

Second issue in this study was lack of discussion between the patient and treating physician regarding BMI and obesity. Almost all of the patients agreed that their

primary treating physician had never discussed regarding BMI and obesity with them. Kushner also reported that only two-thirds of physicians provide dietary counselling to 40% or less of patients and spend 5 or fewer minutes discussing dietary changes despite the fact that nearly three-quarters of physicians felt that dietary counselling is an important responsibility of the physician.<sup>22</sup> Nanda et al in a quality improvement programme at primary care in mayo clinic also found that only 20% of visits of primary care physician had documentation of discussion regarding obesity/BMI. A significant quality gap exists in terms of obesity awareness, discussion, and implementation of treatment options.<sup>13</sup> Reason for that could be multifactorial but were beyond the scope of our study. Kushner in his survey, tried to summarise some of the barriers such as lack of time, patient noncompliance, inadequate teaching material, lack of counselling, training, lack of knowledge, inadequate reimbursement, and low physician confidence and theoretically, all these factors seem to have similar or even worse effect in Indian settings where doctor-patient ratio is poorer and resources are limited as compared to developed nations.<sup>22</sup>

Though this study does not address all aspect related to the knowledge attitude and practice related to obesity, it provides some insight about the magnitude of the problem. On one side, growing as a developing nation and combating the problem of malnutrition and on the other side, entering an era of modern world diseases like obesity. Awareness and behaviour of general population, physician and policy makers can only prevent this epidemic.

## CONCLUSION

There is a significant gap of knowledge among patients regarding obesity and BMI, and physicians also have to take initiatives to discuss about this for primary control of the disease (obesity) and related comorbidities.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Lodha M, Badkur M, Puranik A, Chaudhary R, Rodha MS, Satya P, Kompally P. Knowledge of body mass index and its correlates among the patient at a tertiary care hospital. *Int J Res Med Sci* 2020;8:3924-7.