



Height to Weight Ratio in Hostel versus Non-hostel Students of 4th year in Kabul University of Medical Sciences, Aged 20-25 years

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Abstract: Appropriate nutrition is an important contributing factor to healthy life, which helps in physical and mental health as well as prolonged life expectancy of people. Unfortunately, in developing countries such as Afghanistan there is little focus on the youth nutrition, growth and development. There is imbalance nutritional status among this group, some of them are underweight and some others are overweight. Having normal body weight is one of the important factors for health and wellbeing of the human being and studying the proportion of body height and weight has always been the key focus areas of the researches.

Objective: To identify the height to weight ratio in hostel versus non-hostel students of 4th year in Kabul university of medical sciences.

Method: This descriptive cross-sectional study was conducted on the fourth year students of Kabul Medical University, aged 20 to 25 years. The study materials include digital scale, height measurement instrument and a specific table for recording of the measurements including the subjects' related other information, based on which the BMI of the students in two groups of those who are living in hostel and those who are not in hostel.

Results: a total of 236 students participated in this study including 162 residence of hostel and 74 not hosted. The mean BMI in non-hosteled student was SEM 22.1±0.1, while it is SEM 19.9±0.1 among those who are residing in hostel.

Conclusion: There are differences between the mean BMI value of hosted and non-hosteled students with low BMI in hosted students in comparison to the non-hosteled students.

Key words: Nutrition, Weight, Height, Hostel, Non-hostel and BMI.

Introduction:

Human being in young age reaches to physical and mental maturity and undergoing physical, physiological, behavioral and social changes. Therefore, it is important to take care of the physical and psychological wellbeing of the youths. Appropriate nutrition is an important contributing factor to healthy life, which helps in physical and mental health as well as prolonged life expectancy of people (Nina B. 2017). The purpose of eating is not to fill the stomach, but there is a need to focus on both quality and quantity of food, required for being healthy. Having normal weight is an essential factor for health and wellbeing of the human being (Stenholm S. 2017). Studying the proportion of body height and weight has always been the key focus areas of the researches. Aldophe Quetelet, a Belgium scholar has conducted a study the Body Mass Index (BMI) between years 1830-1850, the findings of which were then largely focused upon by others. He measured the index of body mass based on weight and height ratio, using the formulae: $BMI = \text{weight (Kg)} / \text{height (m}^2) = \text{Kg/m}^2$. This formula is based on the two variables of weight and height. This approach will help you to understand whether you have a normal natural weight or you are under or over weight. The body mass index (BMI), which relates weight to height, is the most common method of determining if an individual's weight is in a healthy range (Khan S. 2018). Body Mass Index is a measure for identification of the nutritional status of a person, which is defined as the weight of a person in kilogram divided by the square meter of his/her height. The BMI for adults over 20 years falls in one of the following categories. (WHO-2020)

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

These numbers were published for the first time in an academic weekly magazine in 1972 and after that it is used one of the best indexes for measuring the estimated values of being under weight or overweight. This index was rapidly accepted by doctors and nutritionist in industrialized country where there were high rates obesity due to which this became one of the valuable and cheaper methods for calculating the ratio of body weight for everyone (Ross C1998). In some of the literatures, there is no difference between the BMI of men and women, while in some others it is consider different, using other measurement methods. According to these studies, the appropriate BMI for women ranges between 17.5 to 23.9. but, to make the BMI aligned between women and men in this method, one unit could be added to the calculated value of BMI for women and then to identify the underweight or overweight using the list of BMI for men (Alan D. 2016). World Health Organization (WHO) believe that if the BMI of a person 18.5, the person is underweight and is suspicious for malnutrition which have negative implication for his physical and mental health. On the other hand, if BMI is over 25 in a person, he is overweight and considered as obese. The obese or overweight people are facing different health problems such as hypertension, hyperlipidemia, diabetes type-II, cardiovascular diseases and etc. (Glimore J1999). The literatures indicated that BMI is used in different countries for the assessment of the changes in body weight. For example, in the magazine of the doctor of east, 1381 fourth year, number 2, page 18 to 86, a study was conducted in Zahidan University of Iran on 720 students, 428 of them were girls with a mean age of (20.9±2.4) and 292 boys with a mean age of (23.3±4.6). The students were selected through the random sampling method and their height and weight were measured and then BMI was calculated. The results show that the mean BMI value for girls' students was 21.6±3.1 and in boys it was 21.7±2.9, which is statistically significance difference between the BMI of boys and girls. This means that 82.62% of the total subtends had normal weight, 3.18% of them were underweight, 12.9% overweight and 1.3 had obesity. The results of the assessment show malnutrition among the students. Therefore, appropriate nutrition programs and lifestyle changes are recommended for these students. Also, another study was conducted by Khawja MerIslam Saeed in 2015 under the heading Obesity trends in adults in Kabul on 1172 people aged 25 to 70 years out of which 599 were women and 573 were men. The results shows that the mean BMI in women was 27.33±6.07 and in men it was 25.07±4.28. There was a need for conduction of such research in Kabul University of Medical Sciences as from one side BMI calculation is part of the physiology practical in Kabul University of Medical Sciences and on the other hand no such study has been conducted in the university.

Purpose

To determine the physical wellbeing of the male students in year 4 of the KUMS with differentiation of those living in hostel and those who are not hosted through calculation of their BMI.

Research questions

- What percentages of students have normal weight?
- What percentage of them is underweight?
- Is there any differences in BMI of hosted versus non-hosted students?

Materials and method:

This is a descriptive cross-sectional study conducted on the fourth years' students of KUMS aged 20 to 25. The study was conducted at the rooms for practical work of the physiology department. First of all, the purpose and procedure of the study was described to the students and informed consent of them was taken. For those who were ready to participate in the study, their height and weight were measured using A digital scale and a height measurement scale. The height was measured in square meter and weight in kilogram, while they should remove additional clothes and to follow all the standard procedures for measurement of height and weight. A list of the students was prepared and their height and weight values are entered to along with their demographic information. The collected data was analyzed using SPSS.

The inclusion criteria include all the students of year four of KUMS aged 20 to 25 years and are voluntarily ready to participated in the study. While those who had any type of disability were excluded

The key variables include age, sex, height, weight, obesity, overweight, underweight, students, BMI

Results:

A total of 236 students participated in the study, out of which 162 were living in hostel and 74 were non-hostel. The mean BMI for non-hosteled student as shown in table (1) was 22.1 ± 0.1 and the mean BMI for the hosteled students as shown in table (2) was 19.9 ± 0.1 . two simple t test method was used to identify the statistical differences between the mean BMI values of the two groups of students, which shows a significance difference $t_{\text{stats}} = 8.07$ ($P < 0.0001$).

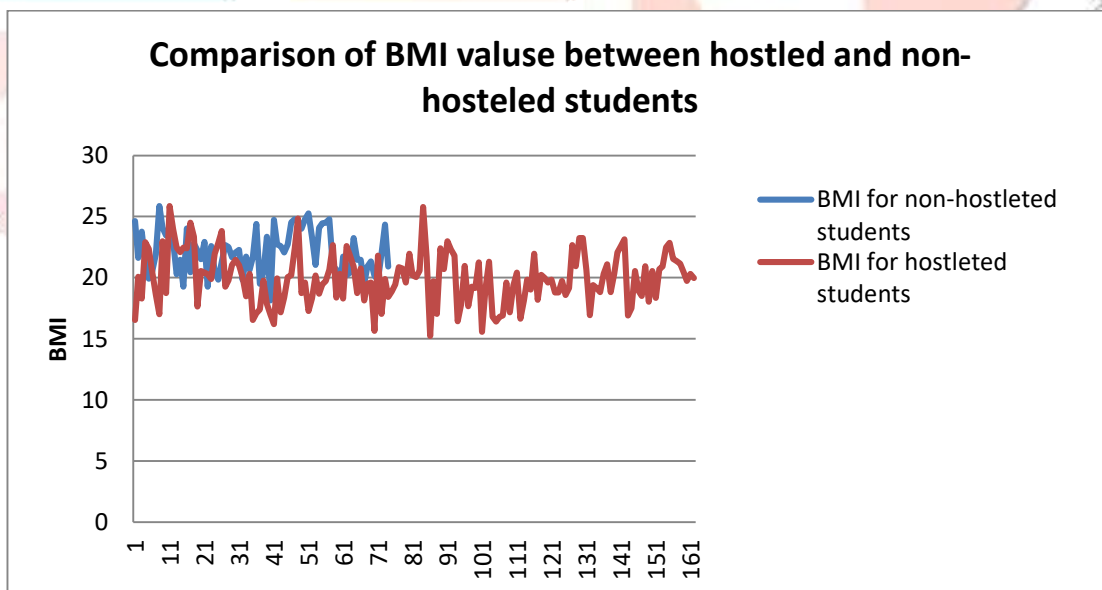
Also, using the WHO standards, 16.07% of all the students participated in the study were underweight, 1.7% were overweight and the remaining 82.2% had normal weight.

Table-1: BMI values for non-hosteled students

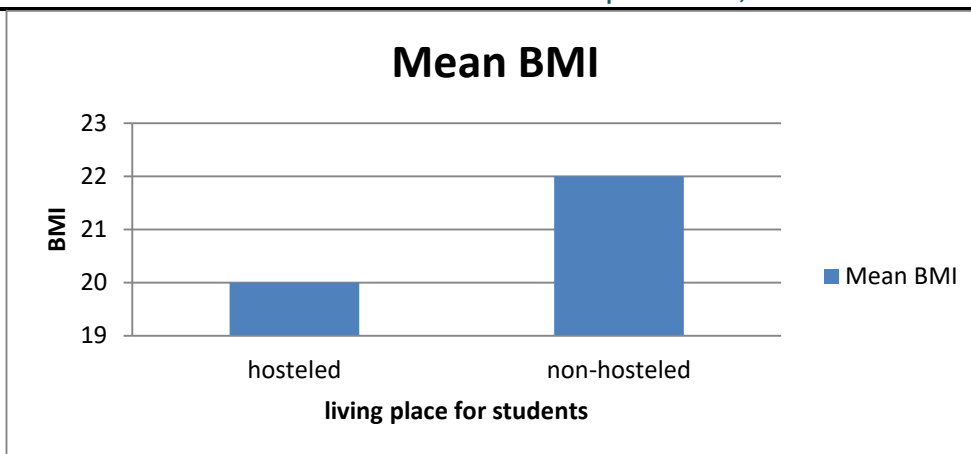
Descriptive statistics	Age	Height	Weight	BMI
Mean	21.9	1.7	64.5	22.1
Median	22	1.7	63.5	21.9
Mode	22	1.6	58	24.8
Standard division	1.1	0.05	7.1	1.8
standard error	0.1	0.006	0.8	0.2

Table-1: BMI values for hosteled students

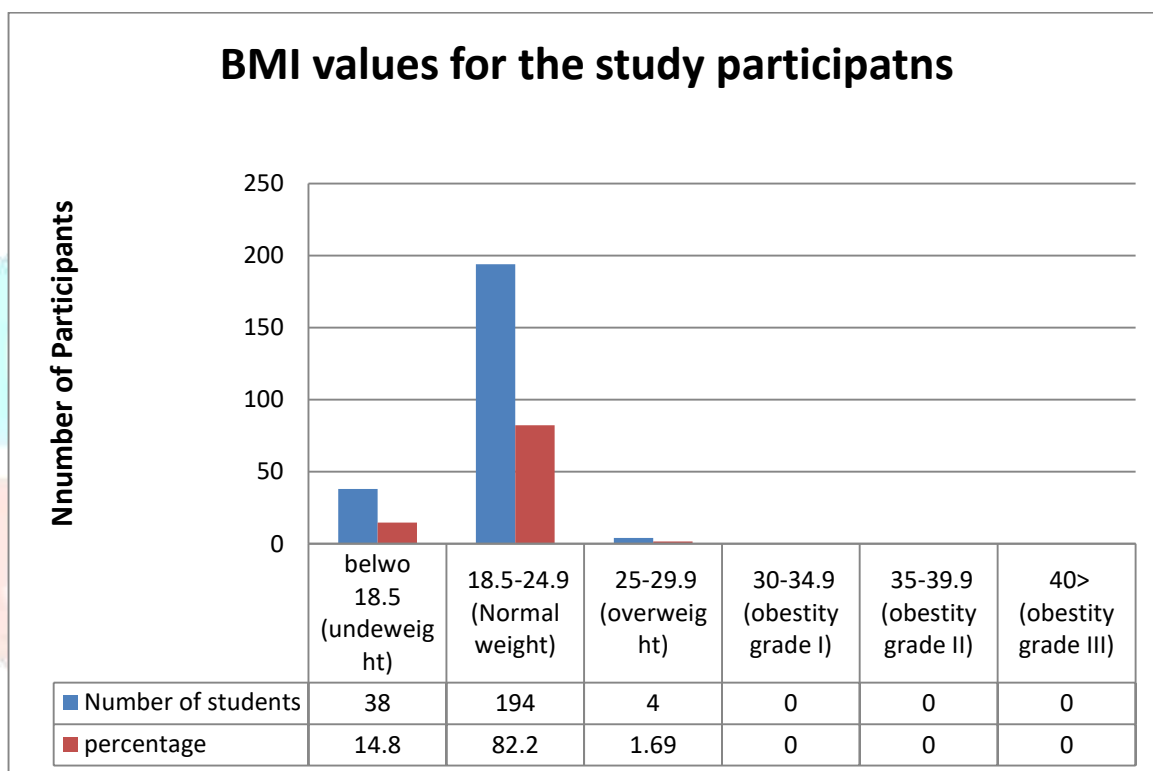
Descriptive statistics	Age	Height	Weight	BMI
Mean	22.08	1.7	58.04	19.9
Median	22	1.7	58	19.9
Mode	22	1.6	60	20.
Standard division	1.3	0.05	6.6	2.09
standard error	0.1	0.004	0.5	0.16



Graph-1: comparison of the BMI between the hosteled and non-hosteled



Graph-2: Average BMI for hosted and non-hosted students



Graph-3: Average BMI for hosted and non-hosted students

Discussion:

This study is conducted on 236 students in fourth year of KUMS with 162 of them are living in the hostel while 74 are non-hosteled to identify their BMI level. The result shows that the mean BMI for non-hosteled student was 22.1±0.1 and for the hosted students 19.9±0.1. the researchers compared the study finding with the literature as below:

A study conducted in Zahidan University of Iran on 720 students, 428 of them were girls and 292 were boys. The mean BMI value for girls’ students was 2.6±3.1 and for the boys it was 21.7±2.9, which is statistically significance difference between the BMI of boys and girls. This means that 82.62% of the total students had normal weight, 3.18% of them were underweight, 12.9% overweight and 1.3 had obesity.

Another study shows that biochemical like Blood glucose, Albumin, Globulin, Total protein and Hb was lower in hostel versus non-hostel students of Sindh university of Pakistan. (Shah, A.2013)

Also, another study was conducted by Khawja MerIslam Saeed in 2015 under the heading Obesity trends in adults in Kabul on 1172 people aged 25 to 70 years out of which 599 were women and 573 were men. The results shows that the mean BMI in women was 27.33±6.07 and in men it was 25.07±4.28.

Conclusion:

This study shows that there is difference value in the BMI values of hosted and non-hosted students of year four of KUMS and the mean BMI of the hosted students is lower than the non-hosted students.

Recommendations: As described above, there is significance difference between the mean BMI values of hosted and non-hosted students of KUMS, further studies are recommended to identify the main causes of this difference and to find appropriate solutions in this regard.

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