JOURNAL OF CREATIVE WRITING
VOLUME 4, ISSUE 1
2020, PP 33 – 53
ISSN 2410-6259

Knowledge Regarding Obesity Among Freshly Admitted Unfergraduate Students of North South University

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Abstract

BACKGROUND: Obesity is a condition of abnormal or excessive fat accumulation in the adipose tissue to the extent that health maybe impaired. Obesity results when the number or size of fat cells in a person's body increases. A normal sized person has between 30-35 billion fat cells which increase in size and later in number (Adhiambo, L.A,2010). Worldwide obesity has nearly tripled since 1975. In 2016, more than 1.9 billion adults, 18 years and older, were overweight. Of these over 650 million were obese. 39% of adults aged 18 years and over were overweight in 2016, and 13% were obese.

METHODS: Using a descriptive cross-sectional study design, 384 freshly admitted undergraduate students were enrolled in the study between May and August 2017. A structured questionnaire was used to interview the participants and to collect data on knowledge on obesity among the students.

RESULTS: This study included 384 students. It was observed that majority of the participants were male (62%) followed by female (38%). 20-22 years of age group (61.7%) was most frequent age group of the participants. (93.8%) of the respondents were Muslim. Majority of the students showed good awareness state in terms of the factors related with obesity such as pregnancy, family history, hormonal disorders, stress, sleeping behavior, food consumption behavior, sedentary lifestyle and medical drugs, alcohol and smoking consumption, except depression and anxiety which almost 15% of the students showed unawareness state. Regarding the clinical factors related to obesity, students also showed good awareness state in the areas of cardiovascular disease, diabetes, respiratory problems, except cancer and osteoarthritis were the students unaware state was 15.6% and 23.4% respectively.

CONCLUSION: This study reveals that in general, the knowledge about obesity among the freshly admitted undergraduate students of north south university was adequate. It also identified a number of gaps in the area of osteoarthritis, cancer, depression and anxiety with the obesity.

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Keywords: Knowledge, Risk factor, Clinical factors, Obesity.

INTRODUCTION

Obesity is a condition of abnormal or excessive fat accumulation in the adipose tissue to the extent that health maybe impaired. Obesity results when the number or size of fat cells in a person's body increases. A normal sized person has between 30-35 billion fat cells which increase in size and later in number (ADHIAMBO, L.A,2010).

Worldwide obesity has nearly tripled since 1975. In 2016, more than 1.9 billion adults, 18 years and older, were overweight. Of these over 650 million were obese. 39% of adults aged 18 years and over were overweight in 2016, and 13% were obese. Most of the world's population live in countries where overweight and obesity kills more people than underweight. 41 million children under the age of 5 were overweight or obese in 2016. Over 340 million children and adolescents aged 5-19 were overweight or obese in 2016.

Obesity prevalence rates have increased worldwide in the last three decades from 1980 to 2008, reaching a prevalence of 10–14% among the world's adult population in 2008 [Even though obesity rates are higher in upper-middle income and high income countries, they are projected to increase rapidly in developing nations. Body mass index (BMI) is the most common way of assessing obesity and is a measure of weight that adjusts for height and correlates highly with body fatness. Waist circumference (WC) on the other hand is a surrogate measure for abdominal fat and is suggested to be a better predictor for certain chronic diseases. Obesity has been linked to a multitude of health conditions including diabetes, hypertension, ischemic stroke and heart disease, different types of cancers, osteoarthritis, reproductive conditions and genetic factors.

As a result, obesity is now among the leading factors for global morbidity and mortality and causes more global deaths than underweight. Economic growth, urbanization, and subsequent changes in lifestyle are among the factors driving the global obesity epidemic (Karageorgi. S, Alsmadi.O, Behbehani.K, 2013).Overall, about 2.5 million deaths are attributed to overweight/obesity worldwide (JOHN WILEY & SONS, LTD, 2001).

Obesity is a major public health and economic problem of global significance. Prevalence rates are increasing in all parts of the world, both in affluent Western countries and in poorer nations.

Men, women and children are affected. Indeed, overweight, obesity and health problems associated with them are now so common that they are replacing the more traditional public health concerns such as under nutrition and infectious disease as the most significant contributors to global ill health.

In 1995, the excess adult mortality attributable to over nutrition was estimated to be about 1 million deaths, double the 0.5 million attributable to under nutrition. The number of people worldwide with a BMI of 30 or above is currently thought to exceed 250 million, i.e. 7% of the world's adult population. When individual countries are considered, the range of obesity prevalence covers almost the full spectrum, from below 5% in China, Japan and certain African nations to more than 75% in urban Samoa. It is difficult to calculate an exact global figure because good quality and comparable data are not widely available However, the contribution of environmental factors cannot be ruled out in familial obesity. Such families may share dietary and lifestyle habits predisposing to obesity, Environmental factors such as diet and the level of physical activity strongly influence obesity.

It has been shown that prevalence of obesity increases with age, the association of obesity and age can be explained, in part, by a decrease in the degree of physical activity with age in both men and women. On the other hand, a decrease in metabolism with age, particularly in women after menopause is another reported explanation. Indeed, globally, women have higher rates of obesity than men. Other risk factors positively associated with obesity include marriage, high educational level, alcohol use and high socio-economic status (Misra. A, Shrivastava.U,2013).
Obesity is emerging as a major health challenge among South Asians, which encompass residents of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan and Maldives, constituting 24% of the world's population. The prevalence of obesity is more in urban areas than rural, and women are more affected than men. Further, obesity in childhood and adolescents is rising rapidly (Nurul Islam Hasib,2017).. In Bangladesh according to demographic and health survey in 2004, the prevalence of obesity (BMI ≥25) in women was 9% and women living in urban areas were found more than three times obese than rural area women (Salahuddin,2012).

Justification of The Study

Obesity poses serious health problems both in developed and developing countries. The prevention and control of obesity in developing countries deserve urgent attention since the disease is expected to double in these countries in the next 20 to 25 years. The problems of obesity in Bangladesh is also increasing day by day as like the Whole world. Bangladesh is traditionally known for the home of world's one of the largest number of underweight children. But a new study, led by the Imperial College London and the World Health Organization or WHO, established experts' apprehension that the country is in fact facing the 'dual burden' of both malnutrition and obesity. It is regarded as the first ever comprehensive data on underweight through to obesity for children and adolescents aged five to 19 years. The study calculated and compared body mass index (BMI) among children, adolescents and adults from 1975 to 2016, and made projections based on current trends in obesity rates. BMI is a measure of a person's weight and body fat mass for their height, and indicates whether their weight is healthy. In Bangladesh, the obesity among boys was found 3 percent in 2016 which was only 0.03 percent in

1975. Among girls, the rate jumped to 2.3 percent from almost nil four decades ago (Nurul Islam Hasib, 2017).

Action to curb obesity is a key element of the 2030 Agenda for Sustainable Development. SDG target 2.2 commits the world to ending all forms of malnutrition by 2030, including overweight and obesity. SDG target 3.4 commits the world to reducing premature deaths from NCDs by one-third by 2030, including through prevention of obesity. There are many adolescents who suffers with many types of factors like high blood pressure (BP), high concentrations of cholesterol in the blood, inadequate intake of fruit and vegetables, overweight or obese, physical inactivity and tobacco use, But they are not aware about these problems.

This study will be able to assess the knowledge regarding Obesity among Freshly admitted undergraduate Students of NSU. The study will be provided relevant information for all those concerned to develop relevant interventional strategies. This will also help health care providers to understand gaps associated the knowledge on obesity, so they can be more aware to these gaps during counseling or intervention regarding obesity. Consequently, a number of studies had assessed the knowledge of obesity in different parts of the world; however, such studies are limited in Bangladesh. Such studies that can improve the knowledge of obesity among the population are much needed to attain sustainable development towards obesity control and prevention.

Operational Definitions

Knowledge: is a familiarity, awareness, or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning.

Risk factor: is any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury.

Obesity: is diagnosed when your body mass index (BMI) is 30 or higher. Your body mass index is calculated by dividing your weight in kilograms (kg) by your height in meters (m) squared.

RESEARCH QUESTION

What is the Level of Knowledge regarding Obesity among Freshly admitted undergraduate students of North South University?

LITERATURE REVIEW

Obesity has been defined as a physiological condition in which excess body fat has accumulated to an extent that can negatively affect health. The measure used most commonly to describe the level of fatness in populations is the body mass index (BMI).

BMI is a weight-for-height measure, introduced as the Quetelet Index in the 1830s and widely used for the past several decades to estimate population trends in fatness. BMI is calculated as weight (kg)/height (m) 2. The BMI measurement is popular for epidemiological studies because of its simplicity and it provides a fairly reliable indicator of the prevalence of obesity in populations (less so for obesity in individuals).

However, there are limitations to its use, even in population studies. The relationship between
BMI and obesity varies with body composition, height and some other factors, For example, BMI does not distinguish between weight associated with lean tissue, such as muscle and bone, and weight associated with fat. Athletes and sports participants commonly have larger muscle mass than other people with the same height and weight, muscle mass influences BMI values.

Obesity can be measured more reliably in other ways, such as skin fold measurements, underwater weighing, bioelectrical impedance, however, these methods also have limitations related to difficulty of use in large populations and accuracy in specific populations.

There have been efforts to use BMI cut-offs to categories people in terms of their risk for Type 2 diabetes and cardiovascular diseases. This has led to the establishment of internationally recognized categories to monitor population trends in body size. A BMI value in the range of < 18.5 kg/m2 is defined as underweight, a BMI of 18.5-24.9 kg/m2 is normal weight, 25-29.9 kg/m2 is overweight, 30-34.9 kg/m2 is obese class 1, 35-39.9 kg/m2 is obese class 2 and 40 or >40 kg/m2 is obese class 3 or morbidly obese.

The BMI range between normal and obese is defined as ‘overweight’. The WHO categories have been adopted as the national standard in Australia. The proportions of the population within these categories are monitored routinely and reported in national health publications.

Associations between BMI, percentage of body fat and body fat distribution have been shown to differ between ethnic groups and across age categories. For example, some Asian populations have shown elevation of health risks at lower BMI points than Caucasians and current international guidelines recommend using a lower cut-off of 26 kg/m2 as the threshold for obesity in Asian populations.

Obesity is also associated with other physio-pathological conditions with high Economic cost and health relevance. Furthermore, the rapid increase in obesity rates over recent years suggests that cultural and societal influences, in Addition to other physio-pathological or genetic determinants, are affecting the Adjustment in the energy balance equation. Thus, it is estimated that 40–70% of the variation in obesity-related phenotypes is heritable. While environmental influences may explain about 30 % of the obesity cases.

The great increase in the prevalence of obesity in populations whose gene pool has been relatively constant provides confirmation that environmental factors have considerable importance.

The process of modernization and economic restructuring in both developing and developed countries has brought about a number of consequences affecting nutritional and physical activity patterns that contribute to the increasing rates of obesity. The food system has improved the availability of high-yielding energy foods, while the sedentary lifestyle with motorized transport and many labor-saving devices, as well as other physically inactive pursuits (TV viewing, computer work etc.), have risen in recent decades (Salahuddin,2012;PETER D. Vash, 2015).

The prevalence of obesity in South Asians varies according to the age, gender, place of residence, socio-economic status, and criteria used for the measurement of obesity.

In general, increasing prevalence of obesity has been seen in all studies carried out in South Asian countries .There are some countries in South Asia with low mean BMI values, e.g., Bangladesh (estimated mean BMI in 2008 was less than 21 kg/m2). However, the recent trends indicate increase in the prevalence of overweight and obesity since 1990s in Bangladesh, Nepal and India (PETER D. Vash, 2015).

The prevalence rates of obesity in India are higher in urban areas as compared to the rural areas, since these are most affected by rapid changes in nutritional pattern and sedentary life style (Kamau W. Jane, 2008; Keynote M.; Kimm S.Y. & Barton B.A, 2001).. In 2003, the prevalence of obesity was 13.5% (10% in men and 15.1% in women) in New Delhi (north India) (Kisseban A.H. & Peins A.N, 2000)

In 2004, overweight (BMI $\geq$ 25 kg/m2) was present in 54.0% men and 69.4% women, while obesity (BMI $\geq$ 30 kg/m2) was present in 20.8% men and 32.3%women in Jaipur city in Western India (Latham M.C, 1997).

In a recent study by our group on urban adult population in New Delhi (north India), the prevalence of obesity was observed to be 50.1% (50.2% in males and 50.0% in females) (Leather S, 1996).

In 1997, prevalence of obesity was reported as 8% in rural north India (Levy E, 1995).. However, in 2008, in rural areas in Andhra Pradesh in south India, the prevalence figures for overweight were 32.4% in men and 41.4% in women using Asian cut offs (Lissener J, Levistly O. & Stropp B.I, 1998).

In a study in rural Tamilnadu (south India) in 2012 using Asian cut offs for obesity, the prevalence was reported to be as high as 32.8% in males and 38.2% in females (Malla J, 2004).

Prevalence rates of obesity in Bangladesh are increasing at a slower pace, from 1980 to 2013 obesity rates in adults grew from 2% to 4%, and rates in children and adolescents remained at about 1.5%. While the percentage of people worldwide who are either overweight or obese has risen substantially over the last 30 years, there have been marked variations across regions and countries. In developed countries, increases in obesity that began in the 1980s and accelerated from 1992 to 2002 have slowed since 2006. Conversely, in developing countries like Bangladesh increases are likely to continue. Health risks such as cardiovascular disease, cancer, diabetes, osteoarthritis, and chronic kidney disease increase when a person's BMI exceeds 23 (Marmonier C, Chapelot D, Fantimo M. and Louis-Sylaster, 2002).

Obesity usually results from a combination of causes and contributing factors, including: Genetic: The genes may affect the amount of body fat you store, and where that fat is distributed. Genetics may also play a role in how efficiently the body converts food into energy and how the body burns calories during exercise, the level and impact of these factors can vary from individual to individual, and these individual differences are affected by genetic factors. Individuals differ in their susceptibility to becoming overweight. Most notably, obesity is more prevalent (10 times more likely) in persons whose parents, brothers, or sisters are obese (Mayoclinic.Riskfactors,2015; Wang, Y. Montein, G. & Popkin B.M,2000).

Family lifestyle: Obesity tends to run in families. If one or both of parents are obese, the risk of being obese is increased. That's not just because of genetics. Family members tend to share similar eating and activity habits (Mayoclinic. Riskfactors, 2015).

Inactivity: If the person not very active, don't burn as many calories. With a sedentary lifestyle, can easily take in more calories every day then that the person burns through exercise and routine daily activities. Having medical problems, such as arthritis, can lead to decreased activity, which contributes to weight gain (Mayoclinic. Riskfactors, 2015).

Unhealthy diet: A diet that's high in calories, lacking in fruits and vegetables, full of fast foods, and laden with high-calorie beverages and oversized portions contributes to weight gain (Mayoclinic. Riskfactors, 2015).

Medical problems: In some people, obesity can be traced to a medical cause, such as Prader-Willi syndrome, Cushing's syndrome and other conditions. Medical problems, such as arthritis, also can lead to decreased activity, which may result in weight gain (Mayoclinic. Riskfactors, 2015).

Certain medications: Some medications can lead to weight gain if the person don't compensate through diet or activity. These medications include some antidepressants, anti-seizure medications, diabetes medications, antipsychotic medications, steroids and beta blockers (Mayoclinic. Riskfactors, 2015).

Social and economic issues: Research has linked social and economic factors to obesity. Avoiding obesity is difficult if the person don't have safe areas to exercise. Similarly, may not have been taught healthy ways of cooking, or may not have money to buy healthier foods. In addition, the people whose spend time together may influence their weight each other — because they are more likely to become obese if you have obese friends or relatives(Mayoclinic. Riskfactors, 2015).

Age: Obesity can occur at any age, even in young children. But as age, hormonal changes and a less active lifestyle increases risk of obesity. In addition, the amount of muscle in the body tends to decrease with age. This lower muscle mass leads to a decrease in metabolism. These changes also reduce calorie needs, and can make it harder to keep off excess weight. If the individuals don not consciously control what they eat and become not physically active they'll likely gain weight (Mayoclinic. Riskfactors, 2015).

Pregnancy: During pregnancy, a woman's weight necessarily increases. Some women find this weight difficult to lose after the baby is born. This weight gain may contribute to the development of obesity in women (Mayoclinic. Riskfactors, 2015).

Quit smoking: Quitting smoking is often associated with weight gain. And for some, it can lead to enough weight gain that the person becomes obese. In the long run, however, quitting smoking is still a greater benefit to health than continuing to smoke (Westonnoefer, 2001).

Sleeping behavior: Not getting enough sleep or getting too much sleep can cause changes in hormones that increase person’s appetite. They may also crave foods high in calories and carbohydrates, which can contribute to weight gain (Westonnoefer, 2001).

Eating behavior: Natural and healthy foods are best for the human body. But few of people actually eat only foods that they can find in nature (Westonnoefer, 2001).

Metabolism: The chemical processes of maintaining and sustaining the body are called metabolism. Metabolism includes digestion, waste elimination, breathing, circulation, and temperature regulation. By the time adults enter their 30s, their metabolism naturally begins to slow and the body becomes less efficient at processing calories. This slowdown can be reduced, however, by increasing muscle building exercise and physical activity.

Depression: The evidence showing the linkage between depression and obesity is mixed, the depression is secondary to the obesity or to existing co morbid conditions (Westonnoefer, 2001).

Chronic diseases: Chronic diseases such as Diabetes, Blood pressure and cardiovascular diseases (CVD) (World Health Organization, 1997).

Obesity can be prevented by Regular exercise: To Increase physical activity an adult person needs to get 150 to 300 minutes of moderate-intensity activity a week to prevent weight gain. Moderately intense physical activities include fast walking and swimming (Jahhns, Siega-Riz & Popkin 2001; Williams, 1998).

Following a healthy eating plan: Focusing on low-calorie, nutrient-dense foods, such as fruits, vegetables and whole grains. Avoiding saturated fat and limit sweets and alcohol. Eating three regular meals a day with limited snacking. Choosing foods that promote a healthy weight and good health most of the time (Mayoclinic. Riskfactors, 2015).

Know and avoid the food traps that cause to eat: Identify situations that trigger out-of-control eating. Trying keeping a journal and write down what to eat, how much to eat, when eat, how the feelings and how hungry are. After a while, should see patterns emerge. Planning ahead and develop strategies for handling these types of situations and staying in controlling of eating behaviors (Williams, 1998).

Monitoring weight regularly: People who weigh themselves at least once a week are more successful in keeping off excess pounds. Monitoring your weight can tell you whether your efforts are working and can help you detect small weight gains before they become big problems (World Health Organization, 1997; World Health Organization (WHO), 2003). Be consistent: Sticking to healthy-weight plan during the week, on the weekends, vacation and holidays as much as possible increases chances of long-term success[27]. Limiting television time, screen time, and other "sit time", Improving sleep and Reducing stresses and depression (Williams S.R, 1998; World Health Organization, 1997; (Suriani Hassan, Nur Amira Abdol Rahman, Khadizah Ghazali, Norlita Ismail, and Kamsia Budin, 2014).

According to Case Study that was conducted by School of Science and Technology, University Malaysia Sabah, Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia was to examine the university students' perceptions on obesity and to compare the difference in mean scores factor based on demographic factors. Data was collected randomly using questionnaires.

There were 321 university students participated in this study. Descriptive statistics, factor analysis, normality test, independent test, one-way ANOVA and non-parametric tests were used in this study. Factor analysis results managed to retrieve three new factors namely impact of the health, impact of the physical

appearance and personal factors. The study found that Science students have higher awareness and perceptions than Art students on Factor 1, impact of the health towards overweight problems and obesity.

The findings of the study showed students, whose family background has obesity problem have higher awareness and perceptions than students' whose family background has no obesity problem on Factor 1, impact of the health towards overweight problems and obesity. The study also found that students' whose father with primary school level had the lowest awareness and perceptions on Factor 2, impact of the physical appearance towards overweight problems and obesity than other students whose father with higher academic level. There was 21.470% variance explained for Factor 1, impact of the health. For Factor 2, which is the impact of the physical appearance, there was 15.104% variance explained. Whereas for Factor 3, which is the personal factors, there was 13.515% variance explained. Overall, the percentage of variance explained for three new factors on students' awareness and perceptions towards overweight problems and obesity was 50.089%.

RESEARCH METHODOLOGY

Study objectives

General objective

To assess the knowledge of obesity among freshly admitted undergraduate students of NSU.

Specific objectives

- To describe socio-demographic and economic characteristics of the students.
- To assess the level of knowledge on obesity related factors among the freshly admitted undergraduate students of NSU.
- To identify the level of knowledge regarding the clinical factors of obesity among the freshly admitted undergraduate students of NSU.

STUDY DESIGN
Study Design

A descriptive cross sectional study will be employed in order to assess the knowledge of obesity among freshly admitted students of NSU.

Target Population and Sample Population

Target population of the study will be freshly admitted undergraduate students of NSU in summer 2019 at Bashundhara R/A, Dhaka, Bangladesh.

Study Site & Area

The study will be conducted at North South University in Bshundhara R/A, Dhaka, Bangladesh.

Study Period

The study will be conducted over a period of 3 months from June to September 2019.

Sample Size

The desired sample size of the study will be estimated using the following formula.

$$n = \frac{Z_{\alpha}^{2} pq}{d^{2}}$$

Where

n= the desired sample size

z= the standard normal deviate usually set at 1.96 which correspondents to 95% confidence level.

α = Level of Significance.

According to our literature review, a study on Perception on obesity among university students in Malaysia demonstrated that around 51% students had awareness and perception towards overweight and obesity problems.

p= Anticipated population proportion = 50.089%= 0.5089

q= (1-p) = (1- 0.5089) =0.4911

d= Degree of accuracy with 5% error = 0.05.

Therefore,

$$= \frac{(1.96)^{2} \text{ X } (0.5089) \text{ X } (0.4911)}{(0.05)^{2}} \qquad N=384.$$

Sampling Technique

A purposive sampling technique will be used to select participants

Inclusion Criteria

- Only freshly admitted undergraduate students of NSU in spring 2019.
- Fresh Students who are willing to participate the study.

Exclusion Criteria

- Undergraduate students who were admitted before spring 2019.

Data Collection Tools

A semi-structured questionnaire will be used to collect data from the sample personnel through direct interview. The questionnaire will be pre-tested to ensure the accuracy, adequacy, feasibility and quality of the data collection instrument.

Based on the pre-testing necessary amendment or modification of the questionnaire will be done.

Data Management and Analysis Plan

a) Data verification, cleaning, and processing: all answered questions will be checked for incompleteness, correction and internal consistency to exclude missing or inconsistent data. Data will be coded, checked, cleaned and edited properly before analysis.

b) Data analysis: statistical analysis will be done using the SPSS statistical package, version 20. Descriptive statistical analysis will be used to calculate the frequencies and Percentages. Cross Tabulation analysis using Pearson Chi-square test will be used to compare important outcome Variable associated p-value of 0.005 would be considered significant.

c) Data Presentation: The data will be presented in percentage, tables, graphs and charts.

Quality Control and Quality Assurance

- The researcher will be involved in the whole process of study design, data collection, processing, analysis, and interpretation. The researcher will work under the close guidance of department of public health, NSU.
- The Researcher will follow the standard research protocol of the department of Public Health, NSU, also International guidelines on research will be followed throughout this period.
- The researcher will collect data from the study location through direct face to face interview. Data will be collected using semi-structured questionnaire.
- The questionnaires will be pre-tested to ensure the accuracy, adequacy, feasibility and quality of the data collection instrument.
- After data collection, 10% of the questionnaire will be verified to ensure reliability, validity and quality of data.
- To ensure quality statistical analysis, SPSS statistical package, version 20 will be used.

Ethical Considerations

- Ethical permission from NSU ethics committee will be taken before data collection. The concerned authority will be informed and taken permission prior to the study. A verbal consent will be taken from each study participants.
- All ethical issues related to the research involving human subjects will be addressed according to the guideline developed by BMRC (Bangladesh Medical Research Council) and the ERC (Ethical Review Committee) of WHO (World Health Organization)

- During the interview the respondents will be briefed on the purpose of the study and then asked if they are willing to participate.
- No data will be disclosed without the permission of the respondents
- Respondent's right to refuse or withdraw from the study will be accepted.
- Confidentiality of the respondents will be maintained.

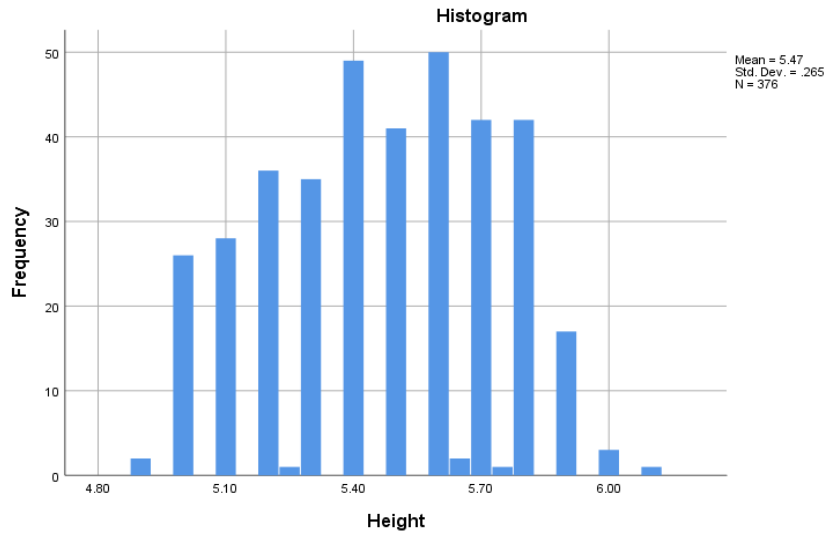
3.15 Expected Outcomes

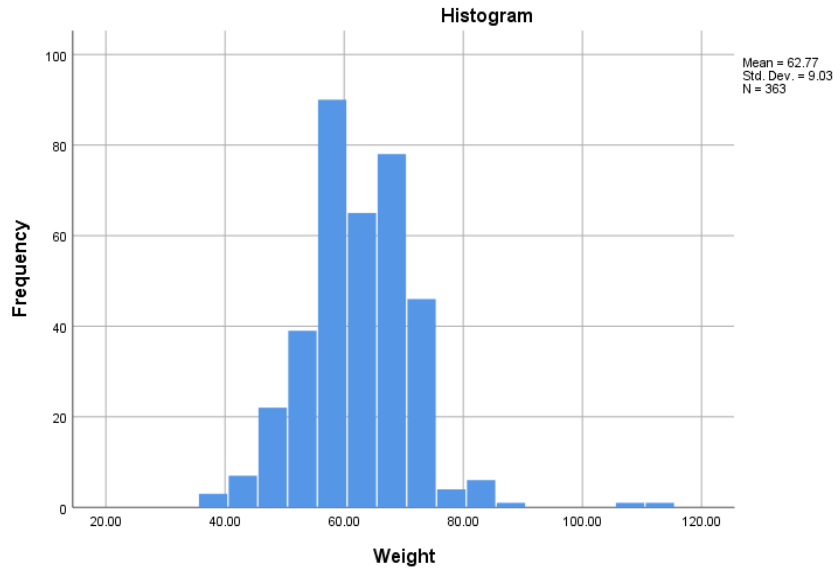
- To certain the association of socio-demographic and economic characteristics of freshly admitted students of NSU regarding the knowledge of obesity.
- To measure the level of knowledge of obesity related factors among freshly admitted undergraduate students of NSU.
- To find out the level of knowledge regarding the clinical factors of obesity among freshly admitted students of NSU.

RESULTS

This chapter presents the data analysis and discussions of the study, and it will describe the Socio-demographic and Economic Characteristics of the Students in terms of Sex, Age, Marital Status, Religion and Family monthly income, the related and clinical factors of obesity, the presentation, interpretation and analysis of the data collected are in accordance with the main purpose of the study which is to assess the knowledge regarding related and clinical factors of obesity among freshly admitted students of NSU.

The presentation and analysis will be based on research objectives and questions, the study design was descriptive cross sectional using Quantitative methods, and data was collected through questionnaire and later analyzed by using descriptive statistics through special software called "SPSS"





The data shows socio-demographic and Economic characteristics of the students with a sample of 384. As the table shows, almost two thirds of the respondents were male constituting 238 (62%) of all of the respondents, while number of female participants was 146 (38%). A total of 382 responds from the students majority of them were aged “between” 20-22 by scoring 237 (61.7%), 17-19 years of age was the second with 109 (28.5%), and finally 23-25 years of age was the least with 36 (9.4%). Single status was the more frequent than married status by getting 382 (99.5%) and 2 (0.5%) respectively. More than two thirds 360 (93.8%) of the respondents were Muslim followed by 23 (6%) of Hindus people and lastly 1 (0.3%) was Christian. Regarding. According to the Height of the students excluding

in 2 missing more than one third of the student's height was in a range of 5.5-5.8 feet containing 177 (46.2%), while the second most frequent range which is almost one third was 5.2-5.4 feet constituting 127 (33.2%), were 4.9-5.1 feet was 51(13.3%) and 5.9-6.1feet was the least frequent range of height of the students in a number of 21 (5.5%). According to the weight of the students apart from 8 missing, more than two thirds of the students weight was lying between 56-75 kg in a number of 279 (72.5%), were 35-55 kg was the weight of 71 (18.4%) of the students and at last 75+kg students were 13 (3.6%). Family monthly income of the student instead of 33 missing were ranged, who their monthly income was ≤ 50,000 TK was 48 (12.6), were 51000-100,000 TK was most frequent family monthly income of the students in a 192 (50%), 101000-150,000 TK was 58 (15.1%) and 151000+ was 53 (14.1%).

The data shows the knowledge of students regarding the related or risk factors of obesity considering the level of awareness in to not aware, slightly aware, moderately aware, very aware and extremely aware.

According to the risk of obesity during the pregnancy 30 (7.8%) of the students were not aware, 86 (22.4) were slightly aware, 115 (29.9%) were moderately aware, 99 (25.8%) were very aware and finally 53 (13.8%) were extremely aware apart from a 2 missing from the total of 384 participants. In terms of the relation of obesity with the family history 14 (3.6%) of the students were not aware, 78 (20.3%) were slightly aware, while 139 (36.2%) were moderately aware, also 125 (32.6%) were very aware and 28 (7.3%) were extremely aware. The relation of hormonal disorders to the obesity 33 (8.6%) of the students were not aware, 89 (23.2%) were slightly aware, whereas 121 (31.5%) were moderately aware, while 96 (25%) were very aware and 45 (11.7%) were extremely aware. Considering the risk of stress to the obesity 37 (9.6%) of the students were not aware, 85 (22.1%) were slightly aware, whereas 91 (23.7%) were moderately aware, while 137 (35.7%) were very aware and 34 (8.9%) were extremely aware. Regarding the relation of depression to the obesity 43 (11.2%) of the students were not aware, 90 (23.4) were slightly aware, 100 (26%) were moderately aware, 103 (26.8%) were very aware and finally 48 (12.5%) were extremely aware. In terms of the relation of obesity with the Anxiety 54 (14.1%) of the students were not aware, 112 (29.2%) were slightly aware, while 134 (34.9%) were moderately aware, also 70 (18.2%) were very aware and 14 (3.6%) were extremely aware. The sleeping behavior of a person with the risk of obesity 13 (3.4%) of the students were not aware, 61 (15.9%) were slightly aware, while 118 (30.7%) were moderately aware, also 145 (37.8%) were very aware and 47 (12.2%) were extremely aware. The food consumption behavior of a person with the risk of obesity 11 (2.9%) of the students were not aware, 29 (7.6%) were slightly aware, while 72 (18.8%) were moderately aware, also 116 (30.2%) were very aware and 156 (40.6%) were extremely aware. Regarding the relation of sedentary lifestyle of a person with the obesity 36 (9.4%) of the students were not aware, 63 (16.4) were slightly aware, 112 (29.2%) were moderately aware, 110 (28.6%) were very aware and finally 63 (16.4%) were extremely aware. The relation of consumption of some medical drugs, smoking and

alcohol with the risk of obesity was that 35 (9.1%) of the students were not aware, 64 (16.7%) were slightly aware, while 93 (24.2%) were moderately aware, also 133 (34.6%) were very aware and 59 (15.4%) were extremely aware.

The data shows the knowledge of students regarding the clinical factors or outcomes of obesity considering the level of awareness in to not aware, slightly aware, moderately aware, very aware and extremely aware. The awareness level of the students for the risk of obesity for developing cardiovascular diseases was that 20 (5.2%) of the students were not aware, 95 (24.7%) were slightly aware, while 134 (34.9%) were moderately aware, also 90 (23.4%) were very aware and 45 (11.7%) were extremely aware. The risk of developing diabetes with regard to obesity was that 35 (9.1%) of the students were not aware, 97 (25.3%) were slightly aware, while 121 (31.5%) were moderately aware, also 105 (27.3%) were very aware and 26 (6.8%) were extremely aware. The risk of developing cancer after with regard to obesity was that 60 (15.6%) of the students were not aware, 115 (29.9%) were slightly aware, while 110 (28.6%) were moderately aware, also 76 (19.8%) were very aware and 23 (6%) were extremely aware. The awareness of the students that the obese person can develop respiratory problems was that 40 (10.4%) of the students were not aware, 97 (25.3%) were slightly aware, while 107 (27.9%) were moderately aware, also 92 (24%) were very aware and 48 (12.5%) were extremely aware. The knowledge of the students that the obese person can develop osteoarthritis was that 90 (23.4%) of the students were not aware, 85 (22.1%) were slightly aware, while 94 (24.5%) were moderately aware, also 73 (19%) were very aware and 42 (10.9%) were extremely aware.

DISCUSSION

The present study assessed the knowledge of the freshly admitted undergraduate students of NSU regarding different aspects of obesity. Knowledge of Risk and clinical factors were measured with the help of a semi-structured questionnaire.

In a study done among adolescents, it was concluded that low-income obese adolescents perceive obesity as a heritage, caused by family genes, side effects of medication use, and stressful life events (Leather S, 1996).. In other study findings, adoption of harmful lifestyle factors was cited as the more common cause than environment / genetics factors for obesity development (Levy E, 1995; Lissener J, Levistly O. & Stropp B.I, 1998). In a systematic review done with an aim to ascertain the early-life determinants of overweight and obesity, factors such as maternal diabetes/smoking, inadequate breastfeeding, obesity in infancy, less sleep, <30 min of daily physical activity, consumption of sugar-sweetened beverages were found to be associated with overweight and obesity in the later life(Malla J, 2004). In-fact even an ecological study has been performed to assess the relationship between social and environmental determinants of obesity (Marmonier C, Chapelot D, Fantimo M. and Louis-Sylaster, 2002). However, in the present study, risk of developing osteoarthritis was reported as the most common unaware clinical factor

cited by the respondents followed by cancer. 90(23.4%) of the students of the present study reported unaware that osteoarthritis is associated with obesity. In a study done at Brazil stated that Obesity is a risk factor for osteoarthritis and the growth in fat mass is directly proportional to exaggerated consumption of nutrients, especially saturated fatty acids, responsible for low grade inflammation and central resistance to insulin and to leptin. At high levels, leptin becomes inflammatory and can trigger an inflammatory process in articular cartilage, changing the homeostasis of this tissue. Exercising and changing diet composition, such as replacing fat by non-saturated fatty acids, can revert the inflammatory process and resistance to leptin, attenuating the speed of progression or preventing the emergence of osteoarthritis. 60 (15.6%) of the students reported unaware of developing cancer with regard to obesity. However in a study performed in China, obesity was the identified as one of the risk factors for development of breast cancer (Mayoclinic.Riskfactors,2015). In a population-based prospective cohort study conducted among hospital patients in Sweden, obesity was found to be a causal factor for cancers of the small intestine, colon and gallbladder (Wang, Y. Montein, G. & Popkin B.M,2000).

In this current study, when students were enquired about psychological conditions such as anxiety, depression and stress relation with obesity 54(14.1%), 43(11.2%) 37(9.6%) they respectively cited unaware response. However, in a study conducted by Grace Bagwell Adams stated that the presence of anxiety in a household was associated with a 16% increase in the probability of obesity in the household ($p<0.01$) and the presence of depression was associated with a 21% increase in the probability that at least one household member was obese ($p<0.01$). Household demographics had no significant relationship with the presence of obesity, but neighborhood safety and receipt of Supplemental Nutrition Assistance Program (SNAP) were negatively associated with household obesity. The results show a positive and statistically significant association between mental health and obesity. Although these findings are specific to Athens-Clarke County residents, the results are similar to those for national surveys, which find an association between obesity and mental health outcomes. Recommendations for public health organizations include the need for additional research and evaluation to create programs that address underlying issues pertaining to obesity.

The knowledge of the students towards the risk of obesity with regard to pregnancy, family history and hormonal disorders showed a great deal of awareness as only 7.8%, 3.6% and 8.6% were reported unaware response respectively. Similar study conducted in Malaysia total of 315 women participated in this study. Their mean age is 29.3 (SD±4.8) years and majority were Malay (72.4%). More than half of them were overweight and obese (60.6%). About 63.2% participants had broad knowledge on obesity related pregnancy risk. Education is a significant predictor of broad knowledge as women with tertiary education had higher odds of having broad knowledge compared to those with only school education (OR 2.1; 95%CI: 1.28 to 3.59). The study found that more than half of the participants had knowledge of obesity related pregnancy risks and that education is a significant predictor for

knowledge. Pre-pregnancy care education programs can help identify barriers, introduce simple weight management strategies to overcome obesity, to ensure better maternal and foetal outcome.

In a study conducted by Marwa Mohammed Yousif, Lamis AbdelGadir Kaddam & Humeda Suekit Humeda on Correlation between physical activity, eating behavior and obesity among Sudanese medical students Sudan showed that the prevalence of obesity among students was 6.5% and overweight was 22.2%. The study showed that 44.9% of medical students had low activity level while 32% of students had moderate activity level and 23.1% had high physical activity level. There was no significant relationship between physical activity and body mass index (BMI) in this study. The common eating pattern among students was controlled eating (45.8%). There was significant relationship between eating behaviors and BMI ($P = 0.01$). The study revealed eating habits has stronger impact on BMI than physical activity. Disturbing figures regarding overweight and low physical activity among medical students, identified in this study, encourages implementation of health programs. Emphasize on importance and benefits of physical activity and eating habits in medical curricula. In this study behavioral factors such as food consumption, sleeping behavior and consumption or use of smoking, alcohol and some medical drugs revealed the knowledge of the students for these factors was high as all these factors were below 10% of unware response.

In a study done at USA to measure knowledge of the health consequences of obesity among overweight/obese Black and Hispanic adults and examine the relationship to prior weight loss found that the majority of participants were knowledgeable of the risk of hypertension (94%), diabetes (96%), high cholesterol (91%), joint pains/arthritis (89%) and sleep apnea (89%) associated with obesity. Among post-menopausal age women, 53% were aware of the increased risk of breast cancer. There was no significant relationship between obesity risk knowledge and previous weight loss of 10 pounds or more (OR= 1.075, 95% CI: [0.808, 1.430]). The study found that knowledge of the health consequences of obesity was high, except for knowledge of the risk of breast cancer. Obesity risk knowledge was not associated with past weight loss. Similarly in this study the knowledge of the students for the clinical factors of obesity such as cardiovascular diseases and diabetes was high as they were below 10% of unaware response except osteoarthritis and cancer which we have mentioned above where the knowledge of the students for the clinical factors of obesity towards the respiratory problems was only 10.14%.

CONCLUSION

This study reveals that in general, the knowledge about obesity among the freshly admitted undergraduate students of NSU was adequate. It also identified a number of gaps in the area of osteoarthritis, cancer, depression and anxiety with the obesity. It is therefore suggests that specialized educations programs should be developed for these areas undergraduate students.

RECOMMENDATIONS

Based on the findings of this research, the following recommendations are as made

- Obesity education is necessary for the undergraduate and higher school students. Obesity education and awareness should be maintained as child obesity is one of the serious problems that showed increase for the last decade.
- Different kinds of mass media should be utilized for delivering sufficient knowledge to students and people overall to equip them more knowledge with the disease.
- Health care providers should co-operate with their patients to provide the community everything necessary towards obesity such as risk factors, health consequences and how to manage it so that they can prevent the disease before it occurs.
- Schools and other educational institutions should be used to significantly improve the knowledge of school students regarding obesity.
- Health policy makers and organizations (GOs & NGOs) working in the areas of health need to design a strategy that addresses the awareness of the society towards obesity and encourages them to participate any activity that is developed to halt obesity.

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