



Prevalence of Obesity and Overweight among Female Nurse Students, Umm Al-Qura University, Makkah, Saudi Arabia

**Hassanat Elbashir Mohammed Mustafa^{1,2*}
and Badria Abd Alla Mohamed Elfaki^{1,2}**

¹*Medical Surgical Nursing, Umm Al-Qura University, Makkah, Saudi Arabia.*

²*Faculty of Nursing, Al-Neelain University, Khartoum, Sudan.*

Authors' contributions

This work was carried out in collaboration between both authors. Authors HEMM and BAAME designed the study, performed, managed the literature, statistical analyzed, wrote, revised and approved the final manuscript. Both authors read and approved the final manuscript.

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ABSTRACT

Aims: The aims of the study to estimate the prevalence of obesity and overweight among females' students to adopt strategies to combat these problems and decrease their risk.

Study design: A cross-sectional study design.

Methodology: It was conducted among 129 participants at Um Al-Qura University collage of nursing, 2017. Stratified proportional random sampling was adopted, structured questionnaire and checklist for body height and weight were used to collect data. Agreement from each participant was taken and then written consent was obtained. The data was analyzed used SPSS version 20. A descriptive statistic was done, BMI was calculated to estimate the prevalence and Chi Square test for statistically significant was used.

Results: Shown that the prevalence of overweight and obesity were 9.0% for each and insignificant (P=Value 0.266) similar among age groups.

The study included 129 females, 51% at age group of 22-25 years and 88% with moderate family income. Also, a high significant obesity 10%, was found among single, while overweight was a high

*Corresponding author: E-mail: hassanat_elbashir@yahoo.com, hemustafa@uqu.edu.sa;

among married participants 45% (P value= 0.002). Addition to high insignificant obesity associated with high family income (P value=0.450).

Conclusions: The study explored that the prevalence of both overweight and obesity were high and similar among participants age groups, and strongly associated with many risk factors which should be considering a serious health problem that need specific attention from the community and health sectors.

Keywords: Prevalence; obesity; overweight; female nurse students.

1. INTRODUCTION

The worldwide repute of obesity has proven an epidemic fashion in many countries. The identical phenomenon is now being in developing countries. Adjustments within the world meals process have involved growing countries in a nutritional transition characterized by means of westernized food plan and an increasingly more sedentary way of life. Due to the multiplied nutritional transition and globalization, it's far now referred to that in growing countries obesity and overweight problems were discovered in poor and rich populations [1]. World health organization reported in 2016, more than 1.9 billion adults at age of 18 years and older, were overweight and 650 million among them were obese [2].

However, across different nations, the prevalence of obesity varies, starting from below 5% in Japan, China, Indonesia, India, and certain African countries to over 75% in Nauru and Samoa and a deadly disease in some countries and it's predicted that by 2030, most of the adult population of the planet would be either obese or overweight, which are contributing of the many factors influences [3].

The prevalence of obesity globally is rising, Saudi Arabia (KSA) was showing increase quite in many other countries. Reported by World Health Organization (WHO) statistics, the general occurrence of obesity in KSA was found to be 35.4% compared with 31.7%, 30.4%, and 27% inside the neighboring United Arab Emirates, Iraq, and Oman, respectively, 27.8% in Syria, and 8.6% in Sudan [4].

Overweight and obesity are described as abnormal or building up of excessive fat due to energy imbalance between calories consumed and calories expended due to metabolic, genetic, biological, behavioral, social, environmental and lifestyle factors which leads to impair health. Also, prevalence of both were increasing among adults during the past decade. Healthcare costs

of obesity-related medical conditions such as: cardiovascular disease, cancers, diabetes, and stroke are thought to exceed \$190 billion per year, obesity-related medical costs alone could rise from \$48 up to \$66 billion a year in the United State of America [5,6].

Obesity rates have risen in the previous 20 years, owing to decreased physical activity and increased consumption of energy-dense meals. There has been strong evidence of an increase in heart attacks, incidence of failure and mortality in relation to obesity [3].

Obesity affects different communities, and its risk factors including race and ethnic group, poverty, lower education levels, genes, eating habits, physical inactivity, sleep patterns, medical conditions, medications and lack of basic nutritional knowledge about healthy food and energy dense foods [2,3]. Being overweight or obese refers to a person's weight being higher than what is considered a normal weight adjusted for height [6]. Data from the Centers of Disease Control and Prevention (CDC) indicates that approximately 78.6 million adults (34.9%) are clinically obese. Primary prevention of obesity and overweight among adult can be achieved through early screening and health education for associated risk factors, and health [7,8].

According to a research of obesity and eating habits, there is a quick sociocultural change because of the Arab region's expanding economy. This has influenced eating habits, and as a result, recent rises in overweight and obesity among Saudis have been documented. Psychological stress, such as that experienced in medical school, is another key role in obesity [9]. Obesity is associated with serious fitness risks and when become sever increases the hazard and complications such coronary heart disease and renal failure [10]. Because of obesity related to serious health risks, monitoring obesity prevalence has relevancy for public health

programs that concentrate on reducing or preventing obesity [11].

WHO recognizes the critical importance of reducing unhealthy diet and physical inactivity [12,13]. Several epidemiological studies among university students have been undertaken in Saudi Arabia to detect overweight and obesity [14]. Obesity and overweight expanding in Saudi Arabia, particularly among women, and are well-known causes of coronary artery disease (CAD), based on collected data from 17,232 Saudi families aged 30-70 years old for a national epidemiological health 7. So this study focused on female nursing students to find out the prevalence of overweight and obesity among females in young age which make this population group suitable to be study and to adopt World Health Organization (WHO) Global Strategy for prevention.

2. MATERIALS AND METHODS

A cross-sectional study conducted at the end of the class on March to June 2017, among under graduated students, at nursing collage. The objective of the study is to estimate the prevalence of overweight and obesity among participants, to prevent the risk and increase their awareness.

The study included female students' nurses at three education levels: second, third and fourth. Their demographic data female gender, age, level of education, marital status, economic status or family monthly income which adopted from Saudi Arabia Monthly Income: Family 2013 [15], addition to Body Mass Index (BMI) and excluded pregnant students and those not willing to participate.

Sampling Technique and Sample Size: A probability sampling technique was followed, and stratified proportional random sampling was used to determine sample.

Sample Size: The equation used for calculation the total study sample size was $(n = N/ 1+N (D2))$.

Then these three steps were followed to find out the proportion of the sample taken from each level. First step determines total study population which constructed of three educational levels or classes by referred to academic lists which amounted to 240 students (second level 95 students, third level 83 students and fourth level 62 students). Second step calculated sample

size using above equation was 150 participants. Third step used stratified random proportion sampling to determine the sample size needed from each stratum using the stratified sample formula (Sample size of the strata = size of entire sample/population size), and sample size was draw from each class; second level 59 participants, third level 83 students, fourth level 39 participants then randomly selected participants from each class that was included in the sample [16].

The data collected using standardized structured electronic questionnaire and check list for recording height and weight which were measured based on specific criteria [17,18].

The questionnaire has been validated by mean of content validity; which reviewed by panel experts and collected data cover all study setting and reliability of scale ensured by repeated measurement under constant circumstances which it gave the same results [19]. The pilot study (pre-test) study tools was carried out on ten participants to ensure validity, reliability, and clarity. Based on the results of pre-testing necessary changes were done and the result of the pilot study was excluded in the final analysis. Then data was collected used both interviewed and observational techniques.

Procedure: Study collectors data which composed four senior nurses interviewed participants face to face and explained purposes of the study, details of consent form that written on the first page at the top of electronic questionnaire to be read and understand before filling. On the other hand, to obtain adequate consent participants informed about no harm or risk were exposed for, confirming data protection they were assured that their information would be kept private and were offered the option to withdraw from the study at any time. Also, interviewed them how to fill questionnaire questions and return it back to researchers and arranged suitable date and time to be attend for measurement of weight and height by team data collectors were trained to measure and record height and weight for each participant used standardized protocols criteria.

Criteria for Measurement: The height and weight criteria measurement for entire participants using a stadiometer (Detecto model) for height and electronic scale (Omron model) for weight. During measurement each participant, wears light clothes, removes their shoes, stand

feet together and arms at the sides on the scale in a complete upright position. Measurements data collected between 7am and 9am in the morning before breakfast to ensure accuracy of the weight [20].

WHO Standards on Obesity and Overweight:

The Body Mass Index (BMI) calculated based on WHO standards; as a person's weight in kilograms divided by the square of the height in meters (kg/m²) to calcify each participant overweight (BMI greater than or equal to 25) and obesity (BMI greater than or equal to 30) as WHO standard definition of adults [2].

2.1 Analysis Methods

Data analyzed use the Statistical Package for Social Sciences (SPSS, Version 20). Descriptive statistic: Univariate analysis was done for demographic characteristics of study population and the result presented in percentage, figures and tables [21].

The prevalence of overweight and obesity estimated based on Body Mass Index (BMI) and compared with population' demographic data, Chi Square Test and P-Value <0.005 was used to cut of the significance of the study.

3. RESULTS AND DISCUSION

3.1 Results

Table 1 showed that the study included three educational levels, grater sample from level two which about 53 (41%), followed by level three 43(33%), and 33(26%) from level four, most of

them (95.8%) were single, while (4.2%) were married, (51%) of the studied participants age ranged between 22-25 years, and about 88% with moderate family income or economic status.

Fig. 1 showed that prevalence of overweight, obesity was 9.0% were similar among participants, while 60.0% within normal weight, and underweight was 22.0%.

Table 2 Showed compared prevalence of overweight and obesity with participants marital status, the study found a significance high prevalence (45.0%) of overweight was found among married participants while more obesity prevalence (10.0%) was found among single participants (P = 0.002).

Table 3 The study found insignificantly prevalence of overweight and obesity versus ages group; between 18-21year were similar (6.0%), and among age between 22-25year were similar (12%), (P value ; 0.266).

Table 4 Showed insignificance similar prevalence of overweight among participants with high and moderate family income, while more obesity (20.0%) found among participants with high family income, (P = 0.450).

3.2 Discussion

Obesity raised among communities, about 0.5 billion people worldwide suffering from it. Obesity is currently prevalent in adults in many nations, with rates ranging from 10% to 40%¹⁹. In Saudi Arabia Obesity and overweight are rising, particularly among women [2].

Table 1. Demographic characteristics of the studied population

Characteristics		Frequency	Percentage
Education levels	Level II	53	41%
	Level III	43	33%
	Level IV	33	26%
	Total	129	100 %
Age	19-21 years	63	49%
	22-25 years	66	51%
	Total	129	100 %
Marital status	Single	120	93%
	Married	9	07%
	Total	129	100 %
Economic status	High (Above Average) > (10,723.000)	10	08 %
	Moderate (Average10,723.000)	114	88 %
	Low (Blow Average < (10,723.000)	5	04 %
	Total	129	100 %

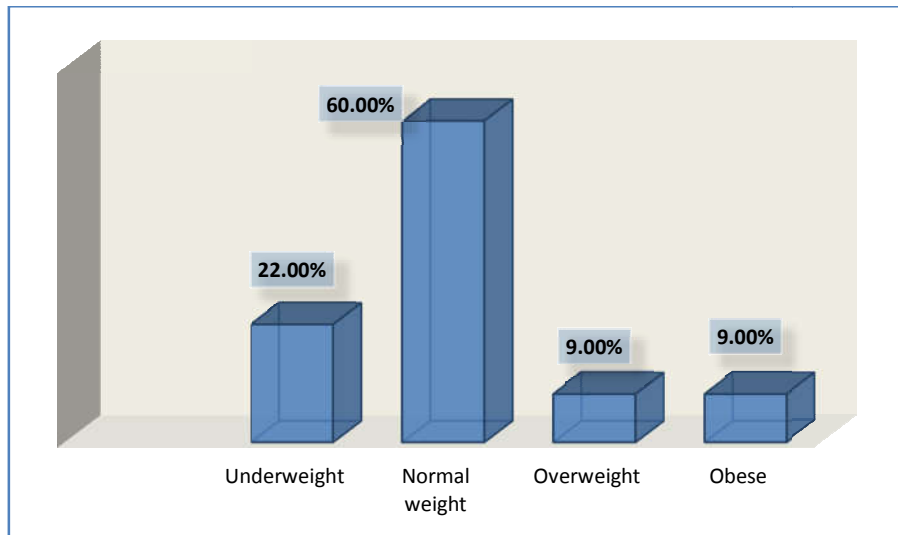


Fig. 1. Prevalence of Body Mass Index Categories among studied population (n=129)

Table 2. Body mass index categories among studied population * versus marital status (P = 0.002)

BMI categories	Marital status		Total
	Married	Single	
Underweight	22 %	22 %	22 %
Normal weight	33 %	61 %	60 %
Overweight	45 %	07 %	09 %
Obese	00. %	10 %	09 %
Total	100 %	100 %	100 %

Table 3. Body mass index categories among studied population * versus age groups (P- 0.266)

Prevalence of body mass index	Age groups		Total
	18 -21 years	22-25 years	
Underweight	27 %	17 %	22 %
Normal weight	61 %	59 %	60 %
Overweight	06 %	12 %	09 %
Obese	06 %	12 %	09 %
Total	100 %	100 %	100 %

Table 4. Body mass index categories among studied population * versus economic status (P = 0.450)

BMI categories	Economic status of the family (Income)			Total
	High	Moderate	Low	
Underweight	40 %	20 %	20 %	22 %
Normal	30 %	61 %	80 %	60 %
Overweight	10 %	10 %	00. %	09 %
Obese	20 %	09 %	00. %	09 %
Total	100 %	100 %	100 %	100 %

The study included 129 participants; they were female, above fifty percent of them at age group of 22-25 years. Most of them were single with moderate families income.

Based on World Health Organization (WHO) standards for overweight and obesity [2], the study found that prevalence of overweight (9.0%), and obesity (9.0%) among participants, compare with similar studies in 2015 conducted on 171 participants through stratified random sampling. Overweight prevalence was 25.1% and obesity was 7.6% which statistically significant, other study among undergraduate nursing students in 2018 the overweight and obesity prevalence were 11.60% and 5.20% respectively; these studies revealed that overweight higher and obesity was low compared with our finding [22,23,24]. But this prevalence was less than found by study among adult population in Jeddah, 2011-2012, prevalence of obesity and overweight were 30.1% and 35.6%, respectively, in women [3]. Also, less than reported by research 2016, the prevalence of overweight and obesity is 36.9% and 35.5%, respectively [2]. These indicator's overweight and obesity increases among others population studies.

When compared overweight and obesity with marital status the study revealed, there was a high significant overweight among married, while obesity associated with single participants (P value 0.002). The Greek epidemiological survey showed that marital status was significantly associated with obesity and overweight compared to unmarried which disagree with our finding [25].

The study reflects that insignificant prevalence of obesity among participants with high income (P value= 0.450), and at group age 22-25 years (P value= 0.266). While insignificant prevalence overweight among participants group age 18-21 years (P value= 0.266). This agree with centers disease control and prevention (CDC) reported that in 2018 obesity prevalence was 40.0% among adults aged 20 to 39 years. But prevalence of obesity was lower among women in the highest income groups, which disagree with study outcome [26].

As well as study conducted in December 2020 among health sciences students in the Amazonia Region of Peru the prevalence of overweight was 26.5% and obesity was 7.9%. The frequency of overweight was significantly higher in persons aged over 20 years these facts indicated that the adolescences group at high risk of obesity [27]. Also a study in Saudi Arabia reflected that the prevalence of obesity among female subjects

was significantly higher than for male subjects (24% vs 16%), increased with age and significantly higher among male subjects with high income [28].

Obesity and overweight, as well as the disorders associated with them, are mostly preventable. Supportive settings and communities are critical in molding people's choices by making the choice of healthy diets and regular physical activity are the most accessible, available, and cheap option, hence preventing overweight and obesity [28]. Lifestyle modification e.g., physical exercise and reduced energy intake is likely to produce some health benefits even without actual weight loss.

4. CONCLUSION

Obesity and overweight prevalence increase within female whom unmarried, with high family income and specially at adolescent age (22-25 years) in the Saudi Arabia. One would expect the magnitude of obesity to be even bigger soon, that leads to increase the risk among these group. According to the study finding a great effort should be made. Adherence to interventional health programs of control and prevention strategy to encourage lifestyle modifications and increasing awareness among population, especially adolescents to minimize health hazards. To emphasizes the importance to establish roles by policymakers to fight obesity in the country and eventually promote health and wellbeing.

5. LIMITATIONS OF THE STUDY

The first limitation the study neglected abdominal measurement (abdominal waist), to find abdominal obesity which was strongly responsible for coronary heart disease and other health problem. Second limitation some other risks related to obesity and overweight not studies.

CONSENT AND ETHICAL APPROVAL

Procedures involved the study participants carried out accordance to institutional research committee ethical standards. The study a permission was obtained from office of the advisor for academic affairs committee and managers at the faculty of participants and written consent from the participants also was ensured.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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