Prevalence of Overweight and Obesity in Relation to Life-Style Among Saudi Arabian Female Nursing Students

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Abstract

Obesity is a global and substantial public health crisis in developed & developing world. Overweight and obesity are increasingly being observed among the youth. This growing rate represents a pandemic that needs urgent attention if its potential morbidity, mortality, and economic consequences are to be avoided.

The Aim of this study was:
• To assess the prevalence of overweight and obesity on a sample of undergraduate nursing students.
• To determine if there is a relationship among certain socio-demographic characteristics, life style and overweight or obesity.

Design: Cross sectional survey-descriptive correlation study, design was used to conduct this study.

Setting: The study was conducted in College of Nursing Dammam University

Subjects: convenient sample consisted of 300 nursing students who accepted to participate in the study. Their aged from 18 to 22 years.

Tools: Two tools were used in this study namely:
"Structured Interview Sheet", to assess socio-demographic characteristics, health history & physical examination and Students' weight status based on BMI categories and percentage body fat. Calculate waist circumference and hip/Waist Ratio.

"Life Style Questionnaire" to assess student’s lifestyle practices including eating habits, meal patterns, physical activity and smoking habit.

Results: Prevalence of overweight and obesity were (35.4%). The unhealthy eating habit of students was noticed in the intake of fried food (majority reported eating fried food one or two times/w). Frequent snacking and eating fried food can adversely affect students' health status, given the abundance of energy dense and high fat ingredients they contain. Physical exercise was practiced at a lower rate by nursing students; 19.7%.

Key Words: Obesity – Overweight – Life style – Prevalence – Nursing students.

Introduction

OVERWEIGHT and obesity result from energy imbalance. The body needs a certain amount of energy (calories) from food to sustain basic life functions. Body weight is maintained when calories eaten equals the number of calories the body expends, or "burns". When more calories are consumed than burned, energy balance is tipped toward weight gain, overweight, and obesity. Genetic, environmental, behavioral, and socioeconomic factors can all lead to overweight and obesity.

The prevalence of overweight and obesity is increasing worldwide at an alarming rate in developed & developing countries. Body weight is a function of energy balance over an extended period of time [1]. Positive energy balance over weeks and months results in weight gain, whereas negative energy balance has the opposite effect. The increase in the prevalence of overweight and obesity cases worldwide is occurring against a background of a progressive reduction in the energy expended for work and occupational activities as well as for the accomplishment of personal tasks and daily necessities [2].

Dietary habits of young adults are affected by the fast-food market. As a consequence, overweight and obesity are increasingly observed among the young. Obesity in combination with unhealthy life style, such as smoking and physical inactivity, may increase the risk of chronic diseases [3].

Data from the Middle Eastern countries of Bahrain, Saudi Arabia, Egypt, Jordan, Tunisia, and Lebanon, among others, indicate this same disturbing trend, with alarming levels of obesity often exceeding 40% and particularly worse in women.
Prevalence of Overweight & Obesity in Relation to Life-Style Among

than in men [4]. In Saudi Arabia, study reported that the prevalence of obesity nearly 3 millions Saudi Arabians suffer from obesity, 55-59% of them were females compared to 40% males, 29% were children. 90% of obesity was due to excessive intake of fast snacks by youth [8]. Therefore, WHO, Urged governments in different countries all over the world to set strategies, through assessment should be proceeding at the national level to define the extent and the magnitude of the problem [6]. This study conducted on nursing students because of obesity has a tremendous effect on their health & work on the future from such a disease can be prevented.

The Center of Disease Control and Prevention (CDC) defines obesity as an excessively high amount of body fat or adipose tissue in relation to lean body mass. Body Mass Index (BMI) is a common measure expressing the relationship of weight-to-height. BMI is a mathematical formula in which a person's body weight in kilograms is divided by the square of his or her height in meters (wt/(ht)2). Individuals with a BMI of 30 or more are considered obese [7].

The World Health Organization has agreed on an international standard for identifying overweight and obesity in adult populations using the body mass index (weight=height2) [8]. The majority of current studies agree that waist circumference (WC) is probably a better indicator of abdominal fatness than either body mass index (BMI) or waist-to-hip ratio (WHR) [9].

Excess weight as measured by BMI is not the only risk to health. Where excess fat is located on body may be another risk. If a person carry fat mainly around his waist, he are more likely to develop health problems than if he carry fat mainly in his hips and thighs even if his BMI falls within the normal range. Women with a waist measurement of more than 88 cm may have a higher disease risk than women with smaller waist measurements because of where their fat lies [10].

Significance of the study:

Life style in youth sector such as eating snacks, irregular eating patterns, and lack exercises are considered as indicators of obesity. For college students, life can sometimes seem like one major obstacle after another. Facing homework from several classes and sometimes outside employment or internship responsibilities, eating a good lunch, or hitting the gym often falls low on the priorities. Assessing students' weight status and eating habits will help health educators to develop proper nutrition-related education programs that promote healthy food choices and good eating habits.

Thus, the aim of this study was to assess the prevalence of overweight and obesity on a sample of undergraduate nursing students, and to determine if there is a relationship among certain socio-demographic characteristics, life style and overweight or obesity.

Materials and Methods

Research design:

Cross sectional survey descriptive design was used in this study.

Setting:

This study was conducted at College of Nursing, Dammam University.

Subjects:

Participants were 300 students who were available at the college of nursing during the time of study. Subjects were from first grade (n=115), second grade (n=94), and third grade (n=91).

Tools:

Two tools were developed by the researchers based on the review of literatures.

Tool I:

"Structured Interview Sheet", to assess socio-demographic characteristics, health history, physical examination and students' weight status based on BMI categories and percentage body fat. Calculate waist circumference and hip/waist ratio.

Tool II:

"Life Style Questionnaire" to assess student's lifestyle practices including eating habits, meal patterns, physical activity and smoking habit.

Procedure:

Formal permission from the Dean & Nursing College Coordinator was obtained and verbal consent was obtained from students to participate in this study.

Data collection:

Tool I and Tool II were collected from each student individually. The data were collected over a period of 4 months from February till May 2009, during this period; data collected from nursing students two days per week. Personal structured interview conducted to fill out the questionnaire sheet concerning personal characteristics data,
assessment of students’ health condition (hypertension or diabetes). After filling out the questionnaire, anthropometric measurements, such as weight and height, percentage body fat and body mass index were done. Blood pressure & random blood glucose level were measured for each student to assess their health condition. The sphygmomanometer is the most common way of measuring blood pressure and is used in current study considering the cut off level for hyper tension is more than 140/90 mmHg. Random measures with a glucometer were used to measure students’ blood glucose. Students were asked to fill out a questionnaire related to their life styles include eating, and drinking habits. The participants were informed to answer a questionnaire and their identity and answers would be kept confidential. At the completion of the questionnaire, the students were thanked for their cooperation.

How is BMI calculated and interpreted:

The formula used is \( \text{BMI} = \frac{\text{weight (kg)}}{\text{height (m)}^2} \).

With the metric system, the formula for BMI is weight in kilograms divided by height in meters squared.

**Example:** Weight = 68 kg, Height = 165 cm (1.65 m)

**Calculation:** \( 68 \div (1.65)^2 = 24.98 \)

Body mass index (BMI) was used to assess students’ weight status. According to guidelines stated by the National Institutes of Health, weight status was classified into four categories: underweight (BMI ≤ 18.5), normal weight (BMI between 18.5-24.9), overweight (BMI between 25-29.9), and obese (BMI ≥30) [11].

Waist circumference (cm) was taken with a tape measure as the point midway between the costal margin and iliac crest in the mid-axillary line, with the student standing and breathing normally. Standard WC cutoffs for high cardiovascular risk have been proposed for adults and are widely used and used in this study.

Statistical analyses:

After data were collected, they were coded and transferred into especially design formats to be suitable computer feeding. Statistical analyses were performed using the Statistical Package for Social Sciences software (version 15.0). Results were presented as means ± SD. Correlation and t-test were used to test the significance of some related variables in this study. A \( p \)-value of (0.05 & 0.01) levels was used as the cut off value for statistical significance.

Results

Table (1) represents the participant’s socio-demographic characteristics for obese and non obese nursing students. As regards student age in the studied sample, the mean age of both obese and non obese students was 20.17 ± 1.3; the means of personal income, weight, & height were (2212 ± 2158, 57.2 ±13.6, 156±5.6) respectively. This table also showed that there was statistical significant difference between the obese and non obese students in relation to their age, personal monthly income, buying a meal by themselves, and weight \( (p= .003, 0.045, 0.023, & 0.000) \) respectively.

Fig. (1) represents the distribution of BMI in Saudi Nursing students. Based on BMI classification, 19.2%, 6.9%, 6.5%, & 2.9% represented in BMI 25-<30, 30-<35, 35-<40, & 40+ respectively. It means that total over weight and obese participants were (106) 35.4% and the rest of participants (194) 64.6% were non obese.

Table (2) represents the health assessment for obese and non obese nursing students. As regards present assessment, the table shows significant statistical differences between obese and non obese nursing student in relation to: present medical illness, random blood glucose level (>110 mg/dl), using diet, exercise, surgical operation and history of family obesity \( (p= 0.005, 0.002, 0.011, 0.007, 0.046, & 0.000) \) respectively.

The findings of this study indicated that more than half of the students (53.5%) were of normal weight as indicated in Fig. (2). Based on BMI classification, the prevalence of overweight and obesity was (25.4% & 10% respectively). In contrast, more than tenth (11.1 %) of the students were underweight. Similarly, the obese students had at the same time higher values of percentage body fat (30.9%) while normal students reported that had no percentage of body fat and that was within the normal range (69.1%) (Fig. 3).

Regarding percentage of students’ weight status based on waist circumferences and percentage of body fat (Fig. 4) illustrates that the students of normal weight had normal percentage of body fat and reported no risk (75.2%). While, the obese students had low values of percentage body fat and at high risk (13.7%) as well as 11.1% had extremely high risk.

As regards student's lifestyle practices table 3 presents the correlation between obese & non obese students in relation to lifestyle of their meals. The majority of obese students (88.68%) were taking
meals irregularly as compared to non obese (45.36). Most of obese students were drink beverages "regular" & coffee/tea (93.4% "89.9%" & 65.09%) respectively. The table also shows a statistical difference between obese and non obese students in relation to irregular meal, three or four time snacks, no beverages, diet beverages, & drink coffee/tea (0.041, 0.015, 0.038, 0.008, 0.019, & 0.006) respectively.

Table (4) represents correlation between obese & non obese students in relation to their lifestyle of eating habits. Their were statistical differences between obese and non obese students in relation to eating breakfast, eating green, red or yellow coloured vegetables, eating fried food, eating fast food, eating with friends, & eating at restaurants (0.036, 0.024, 0.007, 0.019, 0.045, 0.013) respectively.

Table (5) shows correlation between obese & non obese students in relation to their pattern of exercise. Their were statistical differences between obese and non obese students in relation to their practice of exercises & walking type (0.035, 0.004) respectively.

Table (1): Distribution of the studied sample by obesity and socio-demographic factors.

<table>
<thead>
<tr>
<th>Socio-demographic Characteristic</th>
<th>Obese (N = 106)</th>
<th>Non-obese (N = 194)</th>
<th>Total No. (300)</th>
<th>Test of sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20</td>
<td>39 (36.7)</td>
<td>82 (43.2)</td>
<td>121 (79.0)</td>
<td>0.003*</td>
</tr>
<tr>
<td>20 +</td>
<td>67 (63.3)</td>
<td>112 (57.7)</td>
<td>179 (21.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Marital status:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>72 (67.9)</td>
<td>161 (83.0)</td>
<td>233 (77.7)</td>
<td>0.135</td>
</tr>
<tr>
<td>Married</td>
<td>34 (32.1)</td>
<td>33 (17.0)</td>
<td>67 (22.3)</td>
<td></td>
</tr>
<tr>
<td><strong>Number of children:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No child</td>
<td>81 (76.4)</td>
<td>172 (88.7)</td>
<td>253 (84.4)</td>
<td>0.456</td>
</tr>
<tr>
<td>1 child</td>
<td>15 (14.2)</td>
<td>12 (6.2)</td>
<td>27 (9.0)</td>
<td></td>
</tr>
<tr>
<td>2 children or more</td>
<td>10 (9.4)</td>
<td>10 (5.1)</td>
<td>20 (6.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Personal monthly income (SR/Month):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1000</td>
<td>53 (50.0)</td>
<td>90 (46.4)</td>
<td>143 (47.7)</td>
<td>0.045*</td>
</tr>
<tr>
<td>1000-5000</td>
<td>35 (33.0)</td>
<td>96 (49.5)</td>
<td>131 (43.3)</td>
<td></td>
</tr>
<tr>
<td>5000-10,000</td>
<td>12 (11.3)</td>
<td>6 (3.1)</td>
<td>18 (6.0)</td>
<td></td>
</tr>
<tr>
<td>&gt;10,000</td>
<td>6 (5.7)</td>
<td>2 (1.0)</td>
<td>8 (2.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Height: (cm.)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;150</td>
<td>16 (15.1)</td>
<td>25 (12.9)</td>
<td>41 (13.3)</td>
<td>0.654</td>
</tr>
<tr>
<td>150–165</td>
<td>84 (79.2)</td>
<td>160 (82.5)</td>
<td>244 (81.3)</td>
<td></td>
</tr>
<tr>
<td>&gt;165</td>
<td>6 (5.7)</td>
<td>9 (4.6)</td>
<td>15 (5.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Weight: (kg.)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;50</td>
<td>0 (0)</td>
<td>104 (53.6)</td>
<td>124 (41.3)</td>
<td>0.000*</td>
</tr>
<tr>
<td>50–&lt;70</td>
<td>60 (56.5)</td>
<td>90 (46.4)</td>
<td>150 (50.0)</td>
<td></td>
</tr>
<tr>
<td>70–&lt;80</td>
<td>36 (34.0)</td>
<td>0 (0.0)</td>
<td>16 (5.3)</td>
<td></td>
</tr>
<tr>
<td>80–100</td>
<td>6 (5.7)</td>
<td>0 (0.0)</td>
<td>6 (2.0)</td>
<td></td>
</tr>
<tr>
<td>&gt;100</td>
<td>4 (3.8)</td>
<td>0 (0.0)</td>
<td>4 (1.4)</td>
<td></td>
</tr>
</tbody>
</table>

* p <0.05

(Means ± SD) 2212±2158

(Do you buy your own meals?):

| Yes | 90 (84.9) | 89 (45.9) | 179 (59.7) | 0.023* |
| No  | 16 (15.1) | 105 (54.1) | 121 (40.3) |       |

(Means ± SD) 156±5.6

(Higher: (cm.)

|<150 | 16 (15.1) | 25 (12.9) | 41 (13.3) | 0.654 |
|150–165 | 84 (79.2) | 160 (82.5) | 244 (81.3) |       |
|>165 | 6 (5.7) | 9 (4.6) | 15 (5.0) |       |

(Means ± SD) 57.2±13.6
Table (2): Distribution of the studied sample by obesity in relation to their health condition.

<table>
<thead>
<tr>
<th>Health condition</th>
<th>Obese (N = 106)</th>
<th>Non-obese (N = 194)</th>
<th>Test of sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1- Present complaints:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of medical illness (hypertension or diabetes):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>56 (52.8%)</td>
<td>9 (4.6%)</td>
<td>0.005*</td>
</tr>
<tr>
<td>No</td>
<td>50 (47.2%)</td>
<td>185 (95.4%)</td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;90 mmhg</td>
<td>6 (5.7%)</td>
<td>9 (4.6%)</td>
<td>0.005*</td>
</tr>
<tr>
<td>90–120 mmhg</td>
<td>58 (54.7%)</td>
<td>120 (61.9%)</td>
<td></td>
</tr>
<tr>
<td>&gt;120 mmhg</td>
<td>42 (39.6%)</td>
<td>65 (33.5%)</td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;60 mmhg</td>
<td>8 (7.5%)</td>
<td>14 (7.2%)</td>
<td>0.005*</td>
</tr>
<tr>
<td>60–80 mmhg</td>
<td>61 (57.5%)</td>
<td>112 (57.7%)</td>
<td></td>
</tr>
<tr>
<td>&gt;80 mmhg</td>
<td>37 (34.9%)</td>
<td>68 (35.1%)</td>
<td></td>
</tr>
<tr>
<td>Random blood glucose level:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;70 mg/dl</td>
<td>15 (14.2%)</td>
<td>13 (6.7%)</td>
<td>0.005*</td>
</tr>
<tr>
<td>70–110 mg/dl</td>
<td>35 (33.0%)</td>
<td>166 (85.6%)</td>
<td></td>
</tr>
<tr>
<td>&gt;110 mg/dl</td>
<td>56 (52.8%)</td>
<td>15 (7.7%)</td>
<td></td>
</tr>
<tr>
<td>Have you tried to do anything to have an ideal body weight?:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>87 (82.1%)</td>
<td>55 (28.4%)</td>
<td>0.692</td>
</tr>
<tr>
<td>No</td>
<td>19 (17.9%)</td>
<td>139 (71.6%)</td>
<td></td>
</tr>
<tr>
<td>If YES, what do/did you do:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet</td>
<td>18 (17.0%)</td>
<td>39 (20.1%)</td>
<td>0.011*</td>
</tr>
<tr>
<td>Exercise</td>
<td>16 (15.1%)</td>
<td>9 (4.6%)</td>
<td>0.007*</td>
</tr>
<tr>
<td>Medications/Herbs</td>
<td>15 (14.2%)</td>
<td>54 (27.8%)</td>
<td>0.135</td>
</tr>
<tr>
<td>Diet &amp; Exercise</td>
<td>5 (4.7%)</td>
<td>20 (10.3%)</td>
<td>0.000*</td>
</tr>
<tr>
<td>Surgery</td>
<td>12 (11.3%)</td>
<td>32 (16.5%)</td>
<td>0.010*</td>
</tr>
<tr>
<td>Others</td>
<td>40 (37.7%)</td>
<td>40 (20.6%)</td>
<td>0.453</td>
</tr>
<tr>
<td><strong>2- Past history:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A- Past history of medical illness (hypertension or diabetes):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>46 (43.4%)</td>
<td>70 (36.1%)</td>
<td>0.367</td>
</tr>
<tr>
<td>No</td>
<td>60 (56.6%)</td>
<td>124 (63.9%)</td>
<td></td>
</tr>
<tr>
<td>B- History of surgical operation:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>17 (16.0%)</td>
<td>27 (13.9%)</td>
<td>0.046*</td>
</tr>
<tr>
<td>No</td>
<td>89 (84.0%)</td>
<td>167 (86.1%)</td>
<td></td>
</tr>
<tr>
<td>Family history of:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D.M</td>
<td>68 (64.2%)</td>
<td>56 (28.9%)</td>
<td>0.176</td>
</tr>
<tr>
<td>Hypertension</td>
<td>49 (46.2%)</td>
<td>85 (43.8%)</td>
<td>0.087</td>
</tr>
<tr>
<td>Obesity</td>
<td>80 (75.5%)</td>
<td>21 (10.8%)</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

Table (3): Correlation between obese and non obese students in relation to their pattern of their meals.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Obese (N = 106)</th>
<th>Non-obese (N = 194)</th>
<th>Test of sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you take your meals regularly?:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Always regular</td>
<td>12 (11.32%)</td>
<td>106 (54.64%)</td>
<td>0.041*</td>
</tr>
<tr>
<td>Irregular</td>
<td>94 (88.68%)</td>
<td>88 (45.36%)</td>
<td></td>
</tr>
<tr>
<td>How many times do you eat meals per day (apart from snacks)?:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One time</td>
<td>0 (0.00%)</td>
<td>19 (9.79%)</td>
<td>0.015*</td>
</tr>
<tr>
<td>Two times</td>
<td>24 (22.64%)</td>
<td>88 (45.36%)</td>
<td>0.038*</td>
</tr>
<tr>
<td>Three times</td>
<td>37 (34.91%)</td>
<td>76 (39.18%)</td>
<td></td>
</tr>
<tr>
<td>Four times</td>
<td>34 (32.08%)</td>
<td>9 (4.64%)</td>
<td></td>
</tr>
<tr>
<td>More than 4</td>
<td>10 (9.43%)</td>
<td>2 (1.03%)</td>
<td></td>
</tr>
<tr>
<td>Eat only snacks</td>
<td>1 (0.94%)</td>
<td>0 (0.00%)</td>
<td></td>
</tr>
<tr>
<td>Do you drink beverages?:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>99 (93.4%)</td>
<td>88 (45.36%)</td>
<td>0.008*</td>
</tr>
<tr>
<td>No</td>
<td>7 (6.6%)</td>
<td>106 (54.64%)</td>
<td></td>
</tr>
<tr>
<td>If yes, what type do you drink?:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet</td>
<td>10 (10.1%)</td>
<td>60 (31.82%)</td>
<td>0.019*</td>
</tr>
<tr>
<td>Regular</td>
<td>89 (89.9%)</td>
<td>28 (14.18%)</td>
<td></td>
</tr>
<tr>
<td>Do you drink coffee/tea?:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>69 (65.09%)</td>
<td>156 (80.41%)</td>
<td>0.006*</td>
</tr>
<tr>
<td>No</td>
<td>37 (34.91%)</td>
<td>38 (19.59%)</td>
<td></td>
</tr>
</tbody>
</table>
Prevalence of Overweight & Obesity in Relation to Life-Style Among

Table (4): Correlation between obese and non-obese students in relation to their pattern of eating habits.

<table>
<thead>
<tr>
<th>Eating habit as a life style (n=106)</th>
<th>Rarely</th>
<th>1–2 times/ week</th>
<th>3–4 times/ week</th>
<th>Daily</th>
<th>Never</th>
<th>Test of sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you eat breakfast?</td>
<td>46.7</td>
<td>15</td>
<td>21.5</td>
<td>12.6</td>
<td>4.2</td>
<td>0.036*</td>
</tr>
<tr>
<td>How often do you take snacks apart from regular meals?</td>
<td>14</td>
<td>27</td>
<td>14.3</td>
<td>36.5</td>
<td>8.2</td>
<td>0.28</td>
</tr>
<tr>
<td>How often do you eat green, red or yellow coloured vegetables?</td>
<td>49.4</td>
<td>17.1</td>
<td>14.6</td>
<td>11.7</td>
<td>7.2</td>
<td>0.024*</td>
</tr>
<tr>
<td>How often do you eat fruits?</td>
<td>25.4</td>
<td>25.4</td>
<td>25.1</td>
<td>17.9</td>
<td>6.2</td>
<td>0.096</td>
</tr>
<tr>
<td>How often do you eat fried food?</td>
<td>16.3</td>
<td>15.7</td>
<td>27.6</td>
<td>35.2</td>
<td>5.2</td>
<td>0.007*</td>
</tr>
<tr>
<td>How often do you eat Fast food?</td>
<td>10.2</td>
<td>16.5</td>
<td>31.6</td>
<td>34.9</td>
<td>6.8</td>
<td>0.019*</td>
</tr>
<tr>
<td>How often do you eat with family?</td>
<td>16.6</td>
<td>18.6</td>
<td>29</td>
<td>30.6</td>
<td>5.2</td>
<td>0.143</td>
</tr>
<tr>
<td>How often do you eat with friends?</td>
<td>3.7</td>
<td>11</td>
<td>27.8</td>
<td>48.9</td>
<td>8.6</td>
<td>0.045*</td>
</tr>
<tr>
<td>How often do you eat at restaurants?</td>
<td>11.1</td>
<td>32.5</td>
<td>22.5</td>
<td>25.8</td>
<td>8.1</td>
<td>0.013*</td>
</tr>
</tbody>
</table>

Table (5): Correlation between obese & non-obese student's in relation to their pattern of exercise.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Obese (N = 106)</th>
<th>%</th>
<th>Non-obese (N = 194)</th>
<th>%</th>
<th>Test of sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practice of exercises:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>12</td>
<td>11.32</td>
<td>133</td>
<td>68.56</td>
<td>0.035*</td>
</tr>
<tr>
<td>No</td>
<td>94</td>
<td>88.68</td>
<td>61</td>
<td>31.44</td>
<td></td>
</tr>
<tr>
<td><strong>What type of exercise? (145):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aerobics</td>
<td>3</td>
<td>2.07</td>
<td>15</td>
<td>10.34</td>
<td>0.004*</td>
</tr>
<tr>
<td>Walking</td>
<td>4</td>
<td>2.76</td>
<td>110</td>
<td>75.86</td>
<td></td>
</tr>
<tr>
<td>Treadmills/Bike</td>
<td>5</td>
<td>3.45</td>
<td>3</td>
<td>2.07</td>
<td></td>
</tr>
<tr>
<td>Swimming</td>
<td>0</td>
<td>0.00</td>
<td>5</td>
<td>3.45</td>
<td></td>
</tr>
<tr>
<td><strong>How often? (145):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>4</td>
<td>2.76</td>
<td>34</td>
<td>23.45</td>
<td></td>
</tr>
<tr>
<td>3–4 times/week</td>
<td>3</td>
<td>2.07</td>
<td>36</td>
<td>24.83</td>
<td></td>
</tr>
<tr>
<td>1–2 times/week</td>
<td>2</td>
<td>1.38</td>
<td>45</td>
<td>31.03</td>
<td></td>
</tr>
<tr>
<td>Rarely</td>
<td>3</td>
<td>2.07</td>
<td>18</td>
<td>12.41</td>
<td></td>
</tr>
<tr>
<td><strong>For how long do you exercise? (145):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Hour</td>
<td>2</td>
<td>1.38</td>
<td>27</td>
<td>18.62</td>
<td></td>
</tr>
<tr>
<td>Half an hour</td>
<td>4</td>
<td>2.76</td>
<td>43</td>
<td>29.66</td>
<td></td>
</tr>
<tr>
<td>45 minutes</td>
<td>3</td>
<td>2.07</td>
<td>28</td>
<td>19.31</td>
<td></td>
</tr>
<tr>
<td>&lt; than 30 minutes</td>
<td>3</td>
<td>2.07</td>
<td>25</td>
<td>17.24</td>
<td></td>
</tr>
</tbody>
</table>

Fig. (1): Frequency distribution of BMI in saudi nursing students.
Underweight (BMI <18.5), ** Normal (BMI between 18.5-24.9)*** Overweight (BMI between 25-29.9), **** Obese (BMI >30).

Fig. (2): Percentage of students’ weight status based on BMI categories.

Fig. (3): Percentage of students weight status based on WHR categories and percentage of body fat.

Fig. (4): Percentage of students weight status based on WC categories and percentage of body fat.
Discussion

Obesity is an excessive accumulation of body fat and in its gross manifestation poses a real threat to health [12]. It is the most prevalent, chronic medical condition in developing countries [13]. It is well established that directly or indirectly obesity is associated with a wide variety of diseases such as cardiovascular risk factors hyperlipidemia, insulin resistance and hypertension [14,15].

In the present study, the frequency distribution of height, weight and BMI shows normal distribution, body mass index was used to assess weight status. Based on BMI classification of weight status, study indicates that more than half of students were of normal weight. This result is really good image which has be generalized for all nursing students as a leader of the future and will understand the importance of weight control for health status while educate any patient suffering from different diseases.

On the other hand, the result of this study represents that 11.1% & 35.4% were underweight & overweight or obese respectively. This rate of students whom need to change life style and food habits to promote their weight.

Corroborating a tendency that has been reported in the literature, the present study indicates an association between eating habits that are less healthy and over weight & obesity.

Not having breakfast in the morning and rarely eating green, red or yellow coloured vegetables were the specific practices associated to obesity. Niklas, et al. [16] argue that the regular consumption of breakfast may control body weight due to the increase in the consumption of fats in the diet because of the role it plays in minimizing the intake of high energy snacks.

Other studies showed that, students usually do not follow healthy eating habits. The typical university student diet is high in fat and low in fruits and vegetables [3,9,17]. Students often select fast food due to its palatability, availability and convenience. A previous survey by the American Dietetic Association indicated that obesity, or being severely overweight, is a fast-food related issue [18]. The Healthy people 2010 objectives include a focus on nutrition and obesity prevention [19].

In this study, daily intake of snacks was reported by more than half of students as a daily or 3-4 times intake/w. The unhealthy eating habit of students was noticed in the intake of fried food (majority reported eating fried food one or two times/w). Frequent snacking and eating fried food can adversely affect students’ health status, given the abundance of energy dense and high fat ingredients they contain.

Unexpectedly, intake of colored vegetables and fruits was uncommon among students. Smoking was not common also among students. In study conducted by Wardle, et al. 2004, indicate that healthful diet was classified as a diet that included more fruits and vegetables, and less fat [20].

All these results may represent the life style and feeding habits in Saudi culture. Saudi lunch meal depends on rice and lamb meets (kabsa) which is rich in carbohydrates and fat. Moreover, because of the hot weather, they extra drinkers for beverages (soda or juices) which rich in sugars. In addition, they depend more in their meals on baking & pastry which also rich in carbohydrates and starches. Furthermore, lack of physical exercise and even walking due to traditions or habits of Saudi culture and lack of gym or female clubs also share in this trouble.

Thus, improving students’ knowledge about nutrition and healthy eating habits may promote healthy body weight management among students and reduce the prevalence of overweight and obesity. A recent study conducted among college students reported that increased knowledge of dietary guidance, Dietary Guidelines for Americans 2005, appeared to be positively related to more healthy eating patterns thus the better eaters had a higher level of knowledge about nutrition [21].

Conclusion:

Saudi Arabian female student community has been experiencing a nutritional transition in food choices from the typical traditional diet to the fast food pattern due to the students spent most of their time at university campus. As a consequence, the dietary habits of young adults’ female nursing students have been affected; thus, overweight and obesity are increasingly being observed among the youth. As a result of this study, diets were rich in carbohydrates, and deficient in fiber. Breakfast was a regular meal for 67.1% of students. In this study, irregularly taking meals and beverages, soda or juice were representing 60.7% & 66.8% of students. In addition, physical exercise was practiced significantly lower by female students; 19.7%.

It can be recommended that:

1- Increase awareness of students about healthy food, complications of overweight or obesity.
2- Health education and physical education programs in the universities are recommended to promote healthy life styles and dietary habits and change the unhealthy.

3- Physical exercise course has to be added in the curriculum for nursing students.

References


