

Eating habits and obesity and their relationship with certain socio-demographic characteristics among Saudi Nursing Students at the University of Dammam

Al-Mahmoud, Sana Abdulkareem

Management & Leadership, University of Dammam – College of Nursing, Kingdom of Saudi Arabia
Sana98saudi@yahoo.com

Abstract: Obesity is a global and substantial public health crisis in developed world. Overweight and obesity are increasingly being observed among the young. 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 relationship among certain socio-demographic characteristics, eating habits and overweight or obesity on a sample of undergraduate nursing students. *Design:* Cross sectional survey-descriptive correlation study, design was used to conduct this study. *Setting:* The study was conducted in College of Nursing University of Dammam. *Subjects:* convenient sample consisted of 300 nursing students who accepted to participate in the study. Their ages ranged from 18 to 22 years. *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:* The unhealthy eating habit of students was noticed in the intake of fried food (majority reported eating fried food one or two times/week). 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%.

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1.Introduction:

The prevalence of overweight and obesity is increasing worldwide at an alarming rate in developed 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 than in men [4]. In Saudi Arabia, study reported that the prevalence of obesity nearly 3 million Saudi Arabian

suffer from obesity, 55-59 % of them were females as compared to 40% males, 29% were children & 90% of obesity due to excessive intake fast snacks by youth [5]. 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 student 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 ($weight=height^2$) [8]. The majority of current studies agree that waist circumference (WC) is probably a better indicator of abdominal fatness and

cardiovascular disease than either body mass index (BMI) or waist-to-hip ratio (WHR) [9,10].

Significance of the study:

Eating habits 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 hurdle 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 relationship among certain socio-demographic characteristics, eating habits and overweight or obesity on a sample of undergraduate nursing students.

2. Material & Methods

Research Design

Cross sectional survey descriptive design was used in this study.

Setting:

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

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 researcher 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 & College of Nursing academic manager was obtained and verbal consent was obtained from students to participate in this study.

Data Collection

Tools I and II were collected from each student individually. The data were collected over a period of 4 months from February till May 2010, during this period, the nursing students were interviewed twice

per week. First personal structured interview was to fill out the questionnaire sheet concerning personal characteristics data, assessment of their health condition was to perform the anthropometric measurements. Second, students were asked to fill out a questionnaire related to their life styles include eating, drinking and smoking 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.

Data collection conducted in two steps; First Personal structured interview to fill out the questionnaire sheet concerning personal characteristics data, assessment of their health condition was to perform the anthropometric measurements. Second, students were asked to fill out a questionnaire related to their life styles include eating, drinking and smoking habits. After filling out the questionnaire, anthropometric measurements, such as weight and height, percentage body fat and body mass index were done. Weight, percentage body fat and body mass index measurements were determined.

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 \leq 18.5), normal weight (BMI between 18.5 – 24.9), overweight (BMI between 25–29.9), and obese (BMI \geq 30) [11]. Normal range for percentage body fat was considered as follow: 10–20% for males and 20–30% for females.

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 \pm 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.

3. 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 ages, personal monthly income,

buying a meal by themselves, and weight ($p= .003$, 0.045, 0.023, & 0.000) respectively.

Based on BMI classification, the study classified student as obese or non obese.

Underweight (BMI ≤ 18.5), ** Normal (BMI between 18.5 – 24.9), *** Overweight (BMI between 25–29.9), **** Obese (BMI ≥ 30).

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

Socio-demographic Characteristic	Obese		Non-Obese		Total		Test of Sig.
	(N = 106)	%	(N = 194)	%	NO. (300)	%	
Age (years)							
< 20	39	36.7	82	42.3	121	79.0	0.003*
20 +	67	63.3	112	57.7	179	21.0	
(means \pm SD)	20.17 \pm 1.3						
Marital status							
Single	72	67.9	161	83.0	233	77.7	0.135
Married	34	32.1	33	17.0	67	22.3	
Number of children							
No child	81	76.4	172	88.7	253	84.4	0.456
1 child	15	14.2	12	6.2	27	9.0	
2 children or more	10	9.4	10	5.1	20	6.6	
Personal monthly income (SR/Month):							
<1000	53	50.0	90	46.4	143	47.7	0.045*
1000-5000	35	33.0	96	49.5	131	43.7	
5000-10,000	12	11.3	6	3.1	18	6.0	
> 10,000	6	5.7	2	1.0	8	2.6	
(means \pm SD)	2212 \pm 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	
Height: (cm.)							
< 150	16	15.1	25	12.9	41	13.7	0.654
150 – 165	84	79.2	160	82.5	244	81.3	
> 165	6	5.7	9	4.6	15	5.0	
(means \pm SD)	156 \pm 5.6						
Weight: (kg.)							
< 50	0	0	104	53.6	124	41.3	0.000*
50 – < 70	60	56.5	90	46.4	150	50.0	
70 - < 80	36	34.0	0	0.00	16	5.3	
80 – 100	6	5.7	0	0.00	6	2.0	
> 100	4	3.8	0	0.00	4	1.4	
(means \pm SD)	57.2 \pm 13.6						

* $P < 0.05$

Figure (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.

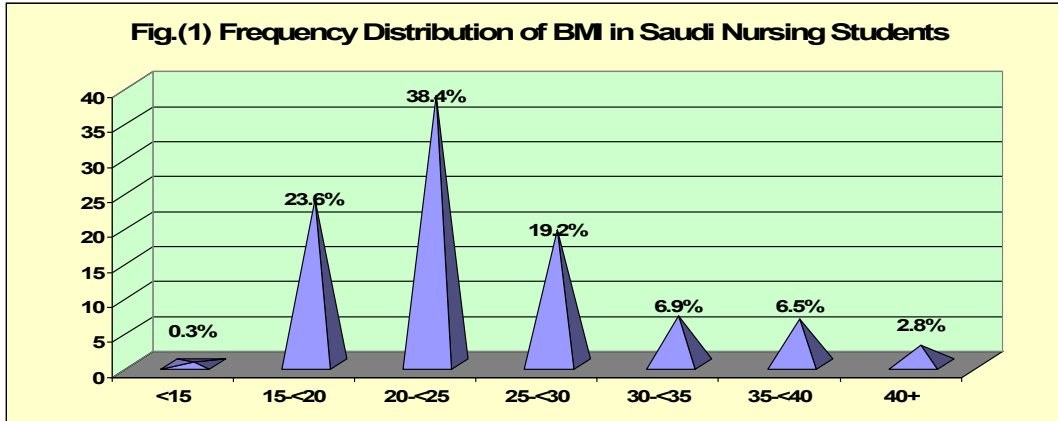


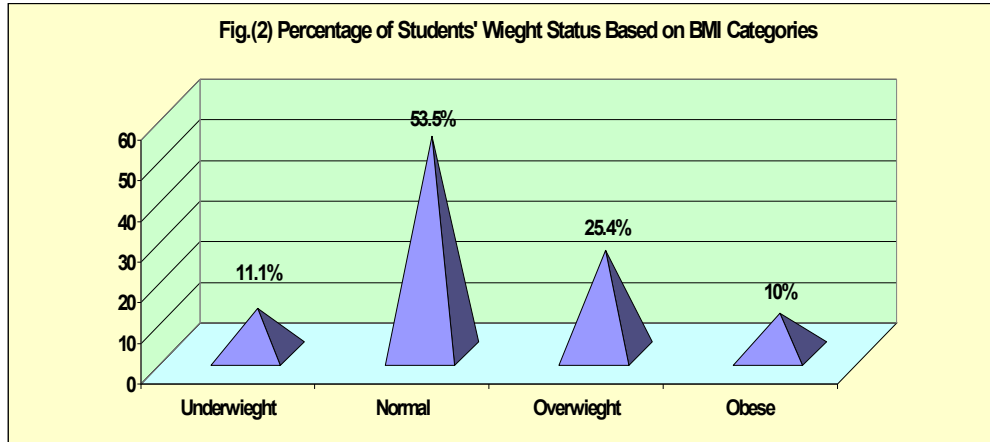
Table (2) represents the health assessment for obese and non obese nursing students. As regards present assessment, the table shows significant statistical differences between obese and non obese nursing student in relation to; present medical illness, random blood glucose level (>110 mg/dl), using diet,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

Table (2) Distribution of the Studied Sample by obesity in relation to their health condition

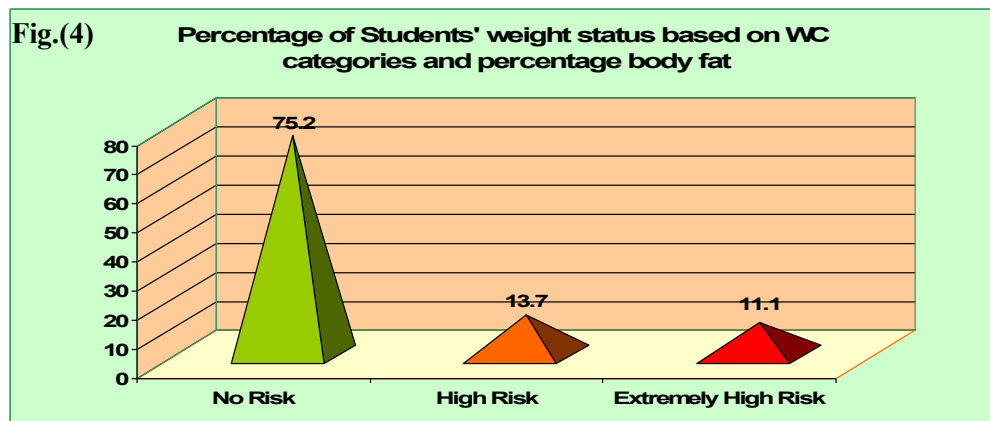
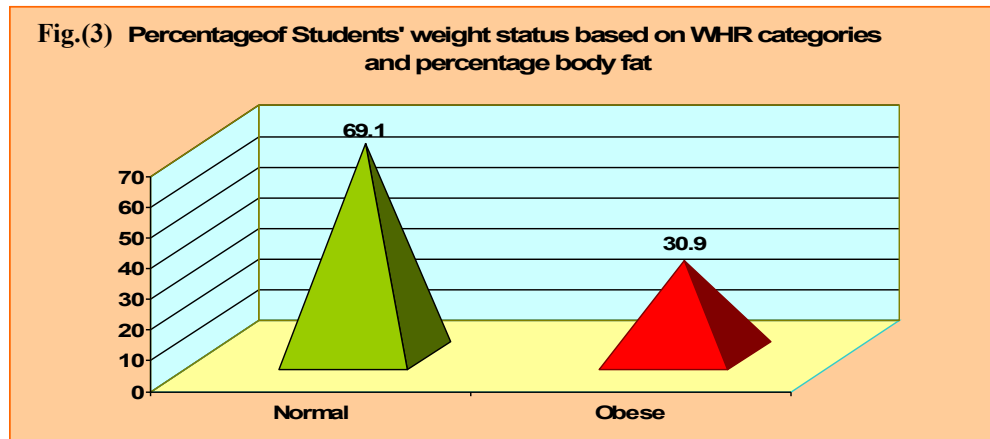
Health Condition	Obese		Non-Obese		Test of Sig.
	(N = 106)	%	(N = 194)	%	
1. Present Complaints					
Presence of medical illness					
Yes	56	52.8	9	4.6	0.005*
No	50	47.2	185	95.4	
Systolic Blood Pressure					
< 90 mmhg	6	5.7	9	4.6	0.643
90 – 120 mmhg	58	54.7	120	61.9	
> 120 mmhg	42	39.6	65	33.5	
Diastolic Blood Pressure					
< 60 mmhg	8	7.5	14	7.2	0.098
60 – 80 mmhg	61	57.5	112	57.7	
> 80 mmhg	37	34.9	68	35.1	
Random Blood Glucose Level:					
< 70 mg/dl	15	14.2	13	6.7	0.002*
70 – 110 mg/dl	35	33.0	166	85.6	
> 110 mg/dl	56	52.8	15	7.7	
Have you tried to do anything to have an ideal body weight?					
Yes	87	82.1	55	28.4	0.692
No	19	17.9	139	71.6	
If YES, what do / did you do:					
Diet	18	17.0	39	20.1	0.011*
Exercise	16	15.1	9	4.6	0.007*
Medications / Herbs	15	14.2	54	27.8	0.135
Diet & Exercise	5	4.7	20	10.3	0.000*
Surgery	12	11.3	32	16.5	0.010*
Others	40	37.7	40	20.6	0.453
2. Past history					
a. Past history of medical illness					
Yes	46	43.4	70	36.1	0.367
No	60	56.6	124	63.9	
b. History of surgical operation					
Yes	17	16.0	27	13.9	0.046*
No	89	84.0	167	86.1	
Family History of:					
D.M	68	64.2	56	28.9	0.176
Hypertension	49	46.2	85	43.8	0.087
Obesity	80	75.5	21	10.8	0.000*

The findings of this study indicated that more than half of the students (54.7 %) were of normal weight as indicated in Figure (2). Based on BMI classification, the prevalence of overweight and obesity was (24.2% & 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%) (Figure 3).



Underweight (BMI ≤ 18.5), ** Normal (BMI between 18.5 – 24.9), *** Overweight (BMI between 25–29.9), **** Obese (BMI ≥ 30).



Regarding percentage of students' weight status based on waist circumferences and percentage of body fat (Figure 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.

Table (3): Student's response to questions related to their lifestyle practices

Questions	No.	%
Do you take your meals regularly?		
Always regular	118	39.3
Irregular	182	60.7
How many times do you eat meals per day (apart from snacks)?		
One time	19	6.3
Two times	112	37.4
Three times	113	37.6
Four times	43	14.3
More than 4	12	4.0
Eat only snacks	1	0.4
Do you drink beverages?		
Yes	205	66.8
No	95	33.2
If yes, what type do you drink? (205)		
Diet	32	15.6
Regular	173	84.4
Do you drink coffee / tea?		
Yes	225	73.3
No	75	26.7

As regards student's response to questions related to their lifestyle practices (Table3) presents eating habits of the students, nearly two thirds (60.4%) of the students were taking meals irregularly as compared to students showed healthier eating

habits in terms of breakfast intake and meal frequency 39.3% i.e. .students reported eating breakfast daily or three to four times per week. Most of students were drink beverages coffee/tea (66.8% & 73% respectively).

Table (4): Percentage of student's lifestyle practices regarding eating habits

Eating Habit as a life style	Rarely	1–2 times /week	3–4 times /week	Daily	Never
How often do you eat breakfast?	13.7	15.0	21.5	45.6	4.2
How often do you take snacks apart from regular meals?	14.0	27.0	14.3	36.5	8.2
How often do you eat green, red or yellow coloured vegetables?	22.1	23.8	23.1	23.1	7.2
How often do you eat fruits?	25.4	25.4	25.1	17.9	6.2
How often do you eat fried food?	16.3	35.8	27.4	15.3	5.2
How often do you eat Fast food?	22.5	40.7	18.6	11.4	6.8
How often do you eat with family?	8.5	22.1	19.9	46.9	2.6
How often do you eat with friends?	16.6	18.6	29.0	30.6	5.2
How often do you eat at restaurants?	11.1	32.2	44.0	4.6	8.1

Table 4 represents percentage of student's lifestyle practices regarding eating habits. More than one third of students 36.5 % reported eating snacks as a part from regular meals per day. Intake of colour vegetables and fruits was uncommon among students. Only 23.1% of the students reported daily intake of colour vegetables of the students while 17.9% reported daily intake of fruits.

The unhealthy eating practice was indicated by the fact that more than one third of students (35.8 %) of the students reported eating fried food one to two times per week. Eating daily with friends and family was common among students (30.6% & 46.9). About 4.6% were eating daily at restaurants, while 44 % of students eat at restaurants 3-4 times per week.

Table 5 shows that smoking was not common among students, 96.7% of the students reported that

they do not smoke, while 1.6 % was smoke occasionally or current smokers. Regarding Practice of exercises, also, this table shows that (47.2%) of the students were practice exercises, (78.6%) among

them reported by walking, 12.4% by aerobics and (32.4%) practiced regularly 1-2 times/week, while (26.9%) either on daily regular basis or 3-4 times /week. 14.5% reported rarely.

Table (5): Student's response to questions related to their lifestyle practices (Smoking & Exercises)

Questions	No.	%
Smoking history:		
Current smoker	5	1.6
Never smoke	290	96.7
Smoke occasionally	5	1.6
If you are a current smoker or ex-smoker or smoke occasionally:		
Type:		
(1) Cigarettes	4	1.3
(2) Hubble-Bubble	4	1.3
(3) Cigar	1	0.6
Number of cigarettes / heads of Hubble-Bubble smoked per day?		
1	2	0.7
2	3	1.0
Practice of exercises:		
(1) Yes	145	47.2
(2) No	155	52.8
What type of exercise? (145)		
(1) Aerobics	18	12.4
(2) Walking	114	78.6
(3) Treadmills / Bike	8	5.5
(4) Swimming	5	3.5
How often? (145)		
(1) Daily	38	26.2
(2) 3-4 times /week	39	26.9
(3) 1-2 times / week	47	32.4
(4) Rarely	21	14.5
For how long do you exercise? (145)		
(1) 1 Hour	39	26.9
(2) Half an hour	47	32.4
(3) 45 minutes	31	21.4
(4) < than 30 minutes	28	19.3

4. 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 non-insulin-dependent diabetes mellitus (NIDDM) [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, findings of this study indicate 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.

In terms of eating habits, the present study data analyses of students' eating habits revealed that more than one third of students eat meals regularly

and the majority of them eat breakfast daily or three to four times per week. These findings supported in some way the study conducted by Yahia *et al.*, revealed that the majority of students eat meals regularly and eat breakfast daily or three to four times per week [16].

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 [16]. The Healthy people 2010 objectives include a focus on nutrition and obesity prevention [18].

In a recent study, namely the Lebanon Global Youth Tobacco Survey (GYTS), conducted among 5035 students aged 13–15 years from 50 schools reported that the prevalence rate of students who were current cigarette smokers was 8.6% and 33.9% were current water-pipe smokers. The GYTS indicated that half of students who were current smokers expressed their desire to stop smoking [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 coloured vegetables and fruits was uncommon among students. Smoking was not common also among students. In study conducted by Wardle *et al.*, 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 meats (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 they 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]

Based on the findings of the present study, it can be concluded that

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 young. 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.
3. Physical exercise course has to be added in the curriculum for nursing students.
4. It is clear that changes must be made to the lifestyle of the Saudi population in order to reduce the prevalence of obesity.

References

1. World Health Organisation, Obesity: preventing and managing the global epidemic. WHO Technical Report Series 894. 2000: Geneva.
2. Kazi, H. A., and Coopoo, Y. Selected Morphological and Lifestyle Profiles of a Cohort of South African University Students. A Journal Dedicated to the Publication of Educational Research. 16(1): 2006; 65-76.
3. Deusinger, R. H. (2005). Weight changes, exercise, and dietary patterns during freshman and sophomore years of college. *Journal of American College Health*(May/June), 245-255.
4. Monteiro CA, Conde WL & Popkin BM. Obesity in developing countries: biological and ecological factors— independent effects of income and education on the risk of obesity in the Brazilian adult population. *J Nutr* 2001; 131: 881–886.
5. Madani KA, Al-Amoudi NS, Kumosani TA. The state of nutrition in Saudi Arabia. *Nutr Health*. 2000;14(1):17-31.
6. World Health Organization. Diet, nutrition and the prevention of chronic diseases. Report of a

- Joint WHO/FAO Expert Consultation on Diet, Nutrition and the Prevention of Chronic Diseases: Geneva; 2002.
7. CDC, (2008). Key Strategies for Schools to Prevent Obesity. CDC Feature, <http://www.cdc.gov/Features/ChildhoodObesity/>
 8. World Health Organization Expert Committee. Physical status, the use and interpretation of anthropometry. *WHO Tech Rep Ser* 2003.
 9. Mbhenyane, X. G., Venter, C. S., Vorster, H. H., & Steyn, H. S. (2005). Nutrient intake and consumption of indigenous foods among college students in Limpopo Province. *South African Journal of Clinical Nutrition*, 18(1), 32-38.
 10. Sakamaki R, Amamoto R, Mochida Y, Shinfuku N, Toyama KA. Comparative study of food habits and body shape perception of university students in Japan and Korea. *Nutr J*. 2005;4:31. doi: 10.1186/1475-2891-4-31.
 11. BMI for Adults. <http://www.nhlbisupport.com/bmi/bmi-m.htm>
 12. Musaiger AO, Lloyd OL, Al-Neyadi SM, Bener AB. Lifestyle factors associated with obesity among male university students in the United Arab Emirates. *Nutrition & Food Science*. 2003;33:145–147. doi: 10.1108/00346650310488480.
 13. Bertias G, Mammias I, Linardakis M, Kafatos A. Overweight and obesity in relation to cardiovascular disease risk factors among medical students in Crete, Greece. *BMC Public Health*. 2003;3:3. doi: 10.1186/1471-2458-3-3.
 14. Barzilai N & Gabriely I. Calorie restriction: effects on body composition, insulin signaling and aging—the role of fat depletion in the biological benefits of caloric restriction. *J Nutr* 2001; 131(Suppl 1): S903–S906
 15. Dausch J. Determining when obesity is a disease. *J Am Diet Assoc* 2001; 101: 93–296
 16. Yahia, N; Achkar, A; Abdallah, A & Rizk, S. Eating habits and obesity among Lebanese university students. *Nutrition Journal* 2008, 7:32doi:10.1186/1475-2891-7-32.
 17. Barzilai N & Gabriely I. Calorie restriction: effects on body composition, insulin signaling and aging—the role of fat depletion in the biological benefits of caloric restriction. *J Nutr* 2001; 131(Suppl 1): S903–S906
 18. *Healthy People 2010 Conference ed.* Washington, DC: US Government Printing Office; 2000.
 19. The GYTS Collaborating Group. Differences in worldwide tobacco use by gender: findings from the Global Youth Tobacco Survey. *J Sch Health*. 2003;73(6):207-215
 20. Wardle J, Haase AM, Steptoe A, Nillapun M, Jonwutiwes K, Bellisle F. Gender differences in food choice: the contribution of health beliefs and dieting. *Ann Behav Med*. 2004;27:107–116. doi: 10.1207/s15324796abm2702_5.
 21. U.S. Department of Health and Human Services. U.S. Department of Agriculture *Guidelines for Americans 2005*. www.health.gov/dietaryguidelines/dga2005.pdf.

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