

Obesity and Related Factors among Jerash University Population

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Abstract

This study aims to measure the prevalence of obesity, to assess the food habits and physical activity among university population in Jerash University, Northern Jordan. A cross-sectional survey of (203) university students and employee (147 males and 56 females) aged 20 to 60 years were selected randomly during the spring 2016 semester. Participants filled out a self-reported questionnaire (included questions on eating and physical activity habits). Weights, heights body mass index (BMI) measured. Study results showed that (39.4%) of sample were overweight and (24.1%) were obese. Prevalence of overweight and obesity was more common among males compared to females (40.8% and 25.2% vs. 35.7% and 21.45 respectively). In contrast 12.5% females were under weight compared to 5.4% males. Majority of the sample (68%) reported taking meals irregularly. A total of (64.3%) of the subjects reported the consumption of colored vegetable while (30%) reported eating fruits daily. More than half of both males and females did not eat fast foods. The prevalence of overweight and obesity were higher in males within the age of 20-25 years while in contrast it is higher in females within the age of more than 30 years (36% and 22.5% in males vs. 7.1% and 26% in females). More than one third of the participants did not engage in any sport exercises for at least 30 minutes during the week.

Keywords: Overweight, Obesity, Food consumption, physical activity, Jordan

1. Introduction

The prevalence of obesity is alarmingly increasing worldwide in both developing and developed countries including Jordan (Khamaiseh et al., 2015; El-Qudah 2008; Musaiger 2004b). It is estimated to be the fifth cause of mortality at global level (Rethaiaa et al., 2010). This increasing prevalence has obliged the World Health Organization (WHO) to specify obesity as significant habit problem throughout the world (WHO 2003). Moreover, it is a risk factor for many common nutritional diseases such as coronary heart diseases, type II diabetes mellitus, hypertension and metabolic syndromes (Abbasi et al., 2002; Nguyen et al., 2008; Stene et al., 2001). The exact causes of obesity remain to be fully elucidated, but excessive energy intake and lack of physical activity are known to be major determinants (Hill et al., 1998; Weinsier et al., 1998). On a recent report by Oxfams world food index; Jordan was ranked among the worst countries of the world in terms of obesity, with 33 per cent of its population, being obese (Oxfams World Food Index 2014). In, approximately 55% of adult respondents (52.3% of men and 57.1% of women) were categorized as either overweight or obese (CDC 2006; El-Qudah 2008). reported that 42.8% in adult population in Amman, Jordan (40.5% and 45.2% for men and women respectively) were either overweight or obese. World Health Organization (WHO) figures indicated that 67.4% of Jordanians are obese, as measured by body mass index (BMI) of 25 or greater, in the study implemented between 2005 and 2006. The percentages of students with overweight and obesity in Al-Albait University – Jordan, were 21.67% and 8.33% respectively, and the means of BMI were 24.2 for males and 21.8 for females (Abu-zaiton et al; 2013).

There are many social determinants associated with obesity among Jordanian women such as age, marriage at an early age, parity, wealth status and smoking. A study among Jordanian women aged 15-49 years showed that the overall prevalence of overweight was 30% and obesity was 38.8% (Al Nsour et al; 2013). The age- standardized prevalence of obesity in north Jordan was 28.1% for men and 53.1% for women (Khader et al; 2008).

2. Materials and Methods

2.1. Ethical statement

Before data collection, the university ethical committee approved the study protocol, the methodology of the research, anonymity of the participants, the protection of identity, privacy and handling of the data. The participants did not receive any incentives for the participating on the study.

2.2. Sample Characteristics and Design

The study design was a cross-sectional survey conducted at Jerash University campus during the spring (2016) semester. A sample of (203) students and university employee (147 males and 56 females), aged from 29 – 60 years participated in the study. All involved participants were briefed about the purpose of the study and were required to provide a written informed consent before participating in the study. After self reported questionnaires were filled by the participants, trained nutrition students helped them to undergo bioelectric impedance analysis for anthropometric measurements in the standard procedure.

2.3. Data Collection

Data collection took place at two steps. The first step was to fill out the questionnaire and the second step was to perform the anthropometric measurements. The questionnaire was designed to study eating habits and physical activity among participants, and its use in the respect had been standardized (Yahia et al., 2008; Al-Hazzaa et al., 2003). Anthropometric measurements, such as weight, height, percentage body fat, body mass index (BMI) were determined with the help of bioelectric impedance analysis (In body 520 GE healthcare, Korea). According to World Health Organization (WHO) 2003) weight status was classified into four categories: underweight (BMI<18.5), normal weight (BMI between 18.5 – 24.9), overweight (BMI between 25.0 – 29.9), and obese (BMI≥30.0). WHR was used to group the population to low and high risk groups (cut-off for males≥0.90 and for females≥0.85) (Waist Circumference 2008). Normal ranges for BF% were considered as follows: 10 -20% for males and 18 -28% for females) (Inbody users manual 2012).

2.4. Statistical Analysis:

Statistical analysis was performed using the Statistical Package for Social Sciences (version 22, SPSS, Inc) software. Analysis of variance (ANOVA) was used to examine differences in the anthropometric characteristics of population. Results were expressed as means ± SD (standard deviation). Parametric variables were analyzed using students t-test while chi-squared analysis was conducted for non-parametric variables. All reported P values were made on the basis of 2- sided tests and compared to a significance level of 5%, differences were considered statistically significant at P≤0.05.

3. Results:

3.1.Characteristics of the population sample:

Characteristics of the participated population are presented in table (1). A total of 203 participants (147 males and 56 females) with age range between 20 – 60 years participated in the study. More than half (55.2%) aged 20 to 25 years, almost a third (30.5%) aged more than thirty years old. About one third of the total sample (33.9%) were married, and the majority of the sample were from the university students (72.5%) and only (27.5%) were from the university employee.

Table1. Distribution of the studied population according to their socio-demographic characteristics n (%).

Characters	Total		Males		Females	
	N	%	N	%	N	%
Sample size	203	100	147	72.4	56	27.6
Age groups (years)						
20 – 25	112	55.2	83	56.5	29	51.8
25 – 30	29	14.3	17	11.5	12	21.4
≥ 30	62	30.5	47	22.5	15	26.8
Average age			27.9		26.6	
Married status						
Unmarried	134	66	93	63.2	41	73.2
Married	69	33.9	54	36.7	15	26.8
University students	127	72.5	88	59.8	39	69.6
University employee	76	27.5	59	40.2	17	30.4

Table (2). Presents anthropometric measurements of the study populations. The average weight and

height of the participants were 76.0± and 169.4± respectively. For both males and females means of BMI were (26.6 and 26.2 respectively), both were considered within the overweight range (25- 29.9), while both WHR were (±0.9 and ±0.89) respectively, and mean of BF% were 24.0% and 36.0% respectively. They were both at risk for developing overweight and obesity.

Table 2. Anthropometric measurements for the study population (Mean ± SD)

Measurements	Total	Males	Females	t-test values males vs. females	t-test sign.
Weight (kg)	76.0	78.9±15.2	68.3±14.9	-4.88	.000
Height (cm)	169.4	172.7±7.2	160.6±6.6	-11.83	.000
BMI kg/m ²	26.4	26.6±4.9	26.2±5.8	-5.73	.567
WHR	0.9	0.90±0.076	0.89±0.057	-1.344	.181
BF%	29.6	27.6±8.0	34.9±9.7	5.089	.000

The results of the study indicated that one third of the population (29%) have a normal weight (28.5% of males compared to 30.4% of females). Collectively, 63% of the study population were overweight and obese, with 39.4% of the total sample being overweight (BMI 25- 29.9) while (24.1%) were obese (BMI≥30) as indicated in table (3). Based on BMI gender stratification, higher prevalence of overweight (40.8% vs. 35.7%) and obesity (25.2% vs. 21.4% in males was observed as compared to females. The difference was not statistically significant. In contrast, 12.5% females were underweight as compared to 5.4% males.

Table 3. Prevalence of obesity among population based on BMI by gender n (%).

Weight status	Total		Males		Females		P-value
	N	%	N	%	N	%	
Under weight BMI ≤18.5	15	7.4	8	5.4	7	12.5	.35
Normal weight BMI 18.5- 24.9	59	29	42	28.5	17	30.4	.35
Over weight BMI 25-29.9	80	39.4	60	40.8	20	35.7	.35
Obesity BMI≥30	49	24.1	37	25.2	12	21.4	.35
Total	203		147		56		

Table 4. presents the crude prevalence of the collective overweight and obese across age groups stratified by gender. Results showed that about 28% of the total sample had BMI more than 25 at age between 20– 25 while 24% at years more than 30 years old. Results showed that high percent (30%) were of overweight and obesity in males group within the age between (20- 25) years, in contrast female group the high percent were among age more than (30) years. On the other hand, results showed that overweight and obesity were increased among females group as the age was increased.

Table 4. Crude prevalence of the sum of both overweight and obese across age groups stratified by gender

Gender Age groups (years)	Total		Males		Female		P –value
	N	%	N	%	N	%	
20 -25	57	28	53	36	5	8.9	.38
25 -30	23	11.3	11	7.5	12	21.4	.38
≥ 30	49	24.1	33	22.5	15	26.8	.38
Total	129		97		32		.38

Gender was used to compare e life style practices. The majority of the participants (68%) reported taking meals irregularly, there were no gender differences (Table5.). Also there is no significant gender difference was found in the response relating to breakfast intake, with 42.4% of males and 55.4% of females reporting eating breakfast daily. About half of both males and females were at risk of skipping breakfast. There were a high prevalence of colored vegetables and fruits consumption patterns for more than three times per week (males 84.3% and 49.7% and females 65.7% 55.3%), in contrast there were a low prevalence of consumption of fried foods for more than three times per week (males 16.3% and females 17.9%). Gender differences were also did not found towards health risk food preferences.

From the total sample, data showed that more than one third of the participants did not engage in any sport exercises for at least 30 minutes daily.

Table 5. Life style practice by gender

Questions	Levels	Total		Males		Females		P- value
		N	%	N	%	N	%	
Do you take your meals regularly	Always regular	65	32	44	29.9	21	37.5	.33
	Irregular	138	68	103	70.1	35	62.5	
Do you take breakfast	-Daily	86	42.4	55	37.4	31	55.4	.33
	-Three or four times per week	33	16.3	22	14.9	11	19.6	
	-Once or twice per week	19	9.4	12	8.2	7	12.5	
	-Rarely	65	32	58	39.5	7	12.5	
How often do you eat green, red, yellow colored vegetable	-Daily	94	64.3	67	45.5	27	28.2	.33
	-Three or four times per week	78	48.4	57	38.8	21	37.5	
	-Once or twice per week	25	12.3	18	12.2	7	12.5	
	-Rarely	6	2.9	5	3.4	1	1.8	
How often do you eat fruits	-Daily	61	30	43	29.3	18	32.1	.33
	-Three or four times per week	43	21.1	30	20.4	13	23.2	
	-Once or twice per week	81	39.9	63	42.8	18	32.1	
	-Rarely	18	8.9	11	7.5	7	12.5	
How often do you eat fried foods	-Daily	10	4.9	7	4.8	3	5.4	.33
	-Three or four times per week	24	11.8	17	11.5	7	12.5	
	-Once or twice per week	55	27	40	27.2	15	26.8	
	-Rarely	114	56.1	83	56.4	31	55.4	
How often do you participate in sport activities for at least 30 minutes	-Daily	34	16.7	21	14.3	13	23.2	.33
	-Three or four times per week	14	6.9	10	6.8	4	7.1	
	-Once or twice per week	80	39.4	53	36	27	28.2	
	-Rarely	75	36.9	63	42.8	12	21.4	

4. Discussion

Obesity and its related risk factors, of chronic diseases, perceived as the major public health problem concern, that threaten healthcare systems, economy and individual lives. Life style and physical activity patterns were linked to obesity epidemic. The purpose of this study was to assess overweight and obesity among the university population to correlate their body weight status and composition with their life style. The present study demonstrates that higher prevalence of overweight (40.8% vs. 35.7%) and obesity (25.2% vs. 21.4%) in males was observed as compared to females, which in contrast (12.5%) of females were underweight as compared to (5.4%) of males. These results are in acceptance with other studies in Jordan as well as other regional countries. In, approximately 55% of adult respondents (52.3% of men and 57.1% of women) were categorized as either overweight or obese (CDC 2006). Among Jordanian adults the overall prevalence of obesity was 49.7% (in males 32.7% and 59.8% in females) (Ajlouni et al.,1998; DOS,2003). El-Qudah (2008) reported that 42.8% in adult population in Amman, Jordan (40.5% and 45.2% for men and women respectively) were either overweight or obese.

In a study carried in Lebanon to estimate the he prevalence of obesity among university students, the study revealed that overweight prevalence was 37.5% in males compared to 13% in female group. On the other hand, female students showed lower estimates of obesity, a normal reflection of females are more conscious about their shape and weight in comparison to males. this resulted was clearly supported only 5.4% of males were underweight compared to 12.5% of females in this study. In another study at Kuwait University high prevalence rate of overweight and obesity was reported among 842 students, the results were 32% and 8.9% respectively (Al-Isa. 1999). Moreover, in United Arab Emirates, a cross- sectional survey conducted among 300 male students reported that the prevalence rate of obesity was 35.7% in males a result higher than the rate of females (Musaiger et al.,2003a). Another study in Hail University, Saudi Arabia regarding the prevalence of overweight and obesity among students revealed that 25.6% and 14.4% of the students were overweight and obese, respectively. According to BMI gender stratification, higher prevalence of underweight (15.4% vs. 11.1%) and obesity (16.7% vs. 13.6%) in males was observed as compared to females (Moes.et al., 2014).

A study conducted among university students (749 students) from State University of Basque Country the prevalence rate of overweight and obesity was 25% in males compared to 13.9% in females(Arroyo et al., 2006).

In 2007 survey in Jordan lack of physical activity was snowballing among Jordanians, mainly due to changes in life style leading more sedentary lifestyle. The study revealed that About 80% of Jordanians (≥ 25 years of age) were physically inactive with less than 10 minutes of regular exercise/day, according to the 2007 stepwise survey.

The current study examined the physical activities, for at least 30 minutes of moderate activity for a previous seven days. Physical inactivity factors were associated with the risk of the development of overweight and obesity among the population of the study. The study showed that about one third of the total sample rarely

participate in sport activities for at least 30 minutes of the previous week. Only (14.3%) of males and (23.2%) of female groups performed daily sport activities for at least 30 minutes.

5. Limitations

Using one cohort group from one university may limit the generalizability of the current study findings.

6. Conclusion

In conclusion, the prevalence of overweight and obesity among the population of Jerash University was close to that observed among comparable age group in the general population. Our finding was consistent with other studies in the region indicating that the prevalence of overweight and obesity is high. Health risk dietary behaviors with inadequate physical activity were most common risk factors for obesity among the participants. Accordingly, the student's awareness of physical activity should be raised. Furthermore, the results emphasize the need for planning specific nutrition education programs to reduce the epidemic of obesity and improving the nutritional well-being of individuals.

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8. Competing Interest:

The authors declare that they have no competing interests. The authors alone are responsible for the content and writing of the paper.

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