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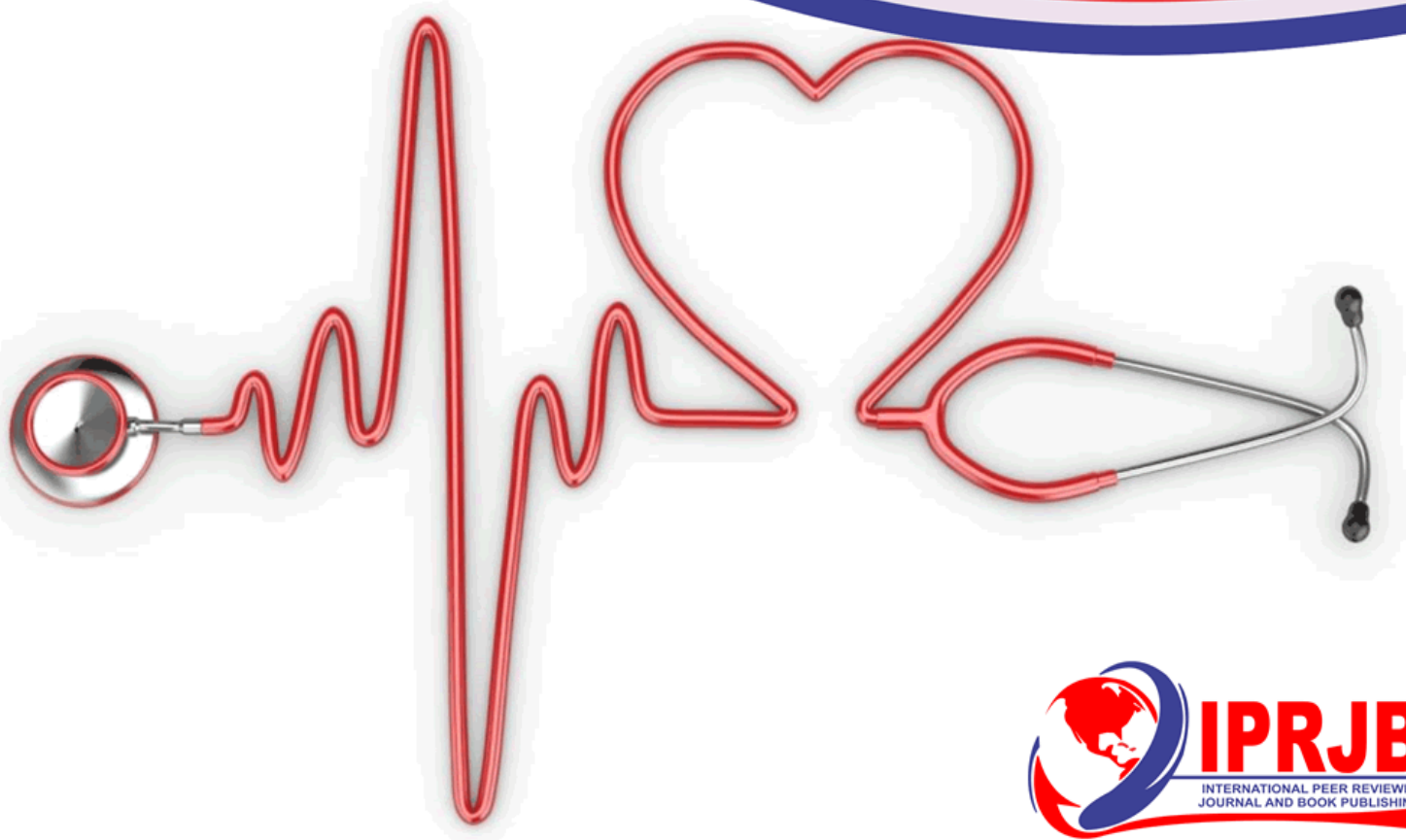
OBESITY RELATED RISK FACTORS AMONG THE SAUDI FEMALE STUDENTS IN JOUF UNIVERSITY

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Abstract

Purpose: Obesity is a major international disaster health problem that leads to increasing the risk of several chronic complications occurrence. The present study aiming to determine the obesity related risk factors among Saudi female students of Jouf University.

Materials and methods: descriptive cross-sectional research design on 200 female students of age 17 – 25 years. Setting: The study was conducted at Quryyat campus of Jouf University-Kingdom of Saudia Arabia. Tool of the study: An interviewing questionnaire was used to collect the data. Data were collected then analyzed using SPSS 24.0 software.

Results: More than two thirds of the students' were had previously encountered health problems. Also less than a quarter of them (20.5%) were had overweight. More over more than a third of them not practicing walking activity and sitting for long periods. There was positive statistically significant correlation between studied students' total knowledge score related to psychological factors and their body mass index (BMI). Behind there was negative statistically significant correlation between studied students' BMI and their total knowledge score related to eating habits

Unique Contribution to Theory, Practice and Policy: Different health education program should be implemented in all sectors of the community to promote knowledge level about obesity prevention methods.

Keywords: *Obesity, Knowledge, Physical Activity, Undergraduate students, Body Mass Index.*

1.0 INTRODUCTION

Obesity is a major international disaster health problem. The World Health Organization (WHO) reported that more than 1.6 billion adults are overweight and more than 400 million are obese (Ng *et al*., 2014). Moreover, mortality rates also elevate with higher degrees of overweight (Hruby *et al*., 2016).

Obesity is an extreme accumulation of body fat or extravagant body weight for height that may deteriorate individuals' health. It calculated using the individuals' height and weight through body mass index (BMI) (Ramasamy *et al*., 2018). People are generally identified as obese once their BMI over 30 kg/m2, while people have BMI with the range between 25–30 kg/m^2 defined as overweight (WHO, 2016).

Furthermore, Al-shehri (2013) reported that obesity as the most common nutritional disorder in the industrialized countries and is becoming increasingly prevalent in developing countries due to changing lifestyle. Several studies have identified elevated rates of obesity in childhood and adolescent, especially the prevalence rate in developing countries (Al-Nozha., 2005; Hu, 2008).

Obesity is an important cause for the development of different diseases as diabetes type 2, hypertension, stroke, heart disease, cancers of the ovaries, breast, and colon and dementia. So preventing obesity is vital in public health priority (Ramasamy *et al*., 2018).

1.1 Statement of the Problem

In Saudi Arabia, statistics indicated that there is a significant rise in the prevalence rate of obesity. A study conducted by Aljaaly (2016) indicated that the issue of body image and weight control beliefs and practices among female college students in Saudi Arabia had poor knowledge level and attitudes towards physical activity. Therefore, in this study, we aimed to investigate the knowledge level of female college students in Jouf, Saudi Arabia regarding the right dietary behaviors and the importance of physical activity that might help to avoid being overweight or obese.

1.2 Study objectives

The current study aims to assess the knowledge level of Saudi female students regarding obesity causes and risk factors.

1.3 Significance of the study

Obesity is a huge worldwide epidemical health problem that leads to different chronic complications. It is counted to be an international, epidemic that its occurrence is rising and has become universal public health. Also, it has an important role in the growth of several chronic diseases such as cardiovascular disease, stroke, hypertension, diabetes mellitus, osteoarthritis and certain cancers.

2.0 MATERIALS AND METHODS

2.1 Study Design:

This was a cross sectional descriptive study, including 200 Saudi female students' campus, enrolled in Jouf University, northern of Saudi Arabia.

2.2 Sample Size

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A Multi-stage random sampling of 200 female students was selected according to the following inclusion criteria.

2.3 Sample selection criteria

1. Age range 17 - 25 years.

2. Free from chronic diseases.

3. Can communicate effectively.

2.4 Tool of Data collection:

Tool: An interviewing Questionnaire: It was developed by the researcher after reviewing recently related literatures. It is including the following parts:

Part I: Personal and medical characteristics of the studied students: to collect basic students' data such as age, birth order, student medical history and family medical history.

Part II: Anthropometric measurements: height and weight to assess BMI.

Part III: **Knowledge assessment questionnaire**: to assess data regarding risk factors contributing to obesity.

Part IV: Correlation between BIM Factors contributing to overweight.

Scoring system for the knowledge assessment scales included specifying points for the scale items as represented in Appendix A, This scoring system allows for all the students to be included in the total. Data analysis was performed after the coding process using SPSS 24.0 software, where univariate, multivariate analysis, frequencies, Mean and standard deviation values and chi-square analysis were utilized in the study in order to assess the students' knowledge level and investigate the association between the study variables.

The researcher had compared personal characteristics factors and BMI for the students' females, then measured the students' knowledge about the risk factors contributing to obesity prevalence by multivariate logistic regression models.

Reliability:

Reliability of study tools had been calculated using Cronbach's Alpha. The following table shows Cronbach's Alpha values for the knowledge assessment scale.

Factors contributing to overweight and obesity scale	Cronbach's Alpha value	Description
Nutritional factor items	0.512 (9 items)	Moderate reliability
Daily eating habits items	0.722(7 items)	Strong Reliability
Physical Activity factor items	0.432(3 items)	Weak reliability
Psychological factor items	0.700 (14 items)	Strong reliability
Total for factors	0.686	Strong Reliability

Validity:

The content validity of the research tool for its completeness and clarity will be maintained through literature review and consultation with concerned advisor (or expert).

2.5 Ethics and Human Subjects Issues

1. Formal approval will be obtained from the concerned authorities.
2. Informed verbal consent will be obtained from the female students before giving the questionnaire.
3. Confidentiality will be maintained throughout the study and will be maintained later.

3.0 RESULTS

3.1 Personal and medical characteristics of the studied students:

Table (1) showed the distribution percentage of the studied sample according to their personal characteristics (Age, Birth Order). This table clarified that more than a third of the study sample was aged 19 years old, while 13% of the total study sample was aged17 years old. Regarding students birth order, there was almost equal percentages for birth order categories, except in the ''First'' category that represented 13% of the total study sample. On the other hand, more than two third of the study sample (70%) had a good income that is considered as "enough and saving" while 26% had enough income, but not saving.

Table 1: The percentage distribution of the studied sample according to their characteristics.

Items	Frequency	Percentage %
Age in years:		
17	26	13
18	62	31
19	72	36
20	40	20
Birth Order:		
First	26	13
Second	41	20.5
Third	46	23
Fourth	49	24.5
More Than Fourth	38	19.0
Income:		
Enough and not saving	52	26
Enough and saving	140	70
Not enough	8	4
Number of family members:		
3	20	10
4 to 6	84	42
More Than 7	96	48

Table (2) results showed that more than two-thirds (66%) of the students' were had previously encountered health problems, while 34% respond negatively for this item. In relation to the studied students' families' history, this table indicated that heart diseases, diabetes and obesity were strongly present in the positively responded students. Female students stated that there is chronic diseases history in their families.

Table 2: The percentage distribution of studied samples according to their medical history.

Items	Frequency	Percentage%
Student Medical History:		
No	140	70
Yes	60	30
Family Medical History:		
No	132	66
Yes	68	34
Diabetes	8	4
Renal disease	8	4
Respiratory disease	8	4
Obesity	6	3
Heart Diseases	16	8
Liver disease	4	2
Other endocrinal disease	2	1
Gastrointestinal disease	8	4

3.2 Part II: Anthropometric measurements:

Table (3) showed the distribution percentage of the studied sample according to their body mass index. This table showed that nearly two- third of the students (62%) were had normal body weight, while 6.5 % of them were obese and less than a quarter of the studied sample (20.5%) had overweight.

Table 3: The distribution of studied sample according to their body mass index.

Body Mass Index	Total	
	No.	%
Underweight	22	11
Normal weight	124	62
Overweight	41	20.5
Obese	13	6.5

3.3 Part III: knowledge assessment questionnaire:

Table (4) showed that the results of knowledge assessment items concerning nutritional factors and their relation to overweight and obesity had indicated that the highest knowledge level was for the items of vegetables and juice and hot drinks by 62% of the study sample. Regarding other items of nutritional factors, statistics results indicated that students' knowledge was ranging from 26.5% to 51%.

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Table 4: Self-Reported knowledge of studied sample about obesity related nutritional factors.

Knowledge Item	N=200 N	N=200 %	P Value x^2-Test
Oil Nutritional Facts	53	26.5	0.003
Butter Nutritional Facts	56	28.0	0.003
Cream Nutritional Facts	55	27.5	0.003
Rice Nutritional Facts	54	27	0.003
Macaroni Nutritional Facts	59	29.5	0.003
Bread Nutritional Facts	68	34.0	0.003
Vegetables Nutritional Facts	124	62	0.003
Juice and hot drinks Nutritional Facts	124	62	0.003
Cane Nutritional Facts	102	51	0.003

Table (5) clarified that the distribution of studied sample according to their knowledge about eating habits as factors contributing to overweight. Knowledge assessment results showed that 32% and 25% of them eating too much even if not hungry and eating between regular meals respectively. While less than one-quarter of them (21.5% & 21%) eating potato chips, ice cream, biscuits and Eating peanuts during watching television respectively.

Table 5: Self-Reported practice of studied sample about obesity related nutritional habits.

Knowledge Item	N =200 N	N =200 %	P Value x^2-Test
Eating during watching television	25	12.5	<0.001
Sleeping directly after eating	38	19	0.007
Eating peanuts during watching television	42	21	0.003
Eating too much even if not hungry	64	32	0.003
Eating between regular meals	50	25	0.003
Eating potato chips , ice cream , biscuits,…etc.	43	21.5	0.007
Eating for complementary	34	17	0.035

Table (6) illustrated the distribution of studied sample according to their knowledge about physical activity as factors contributing to overweight and obesity. Results of this table indicated that 27% considered not practicing sport is causing overweight. While 31% and 34% had revealed that not practicing walking activity and sitting for long periods are causes of overweight & obesity respectively.

Table 6: Self-Reported knowledge of studied sample about obesity related Physical activity factors.

Knowledge Item	N =200 N	N =200 %	*P* Value x^2-Test
Not Practicing sport	54	27	<0.007
Not Walking	62	31	<0.001
Sitting for long periods	68	34	<0.001

Regarding table (7) results of self-reported knowledge assessment of psychological factors related to overweight and obesity showed that more than half of the studied sample 57% & 52.5% reported that Studying for long periods & Loneliness were considered as a psychological factor contributing to overweight and obesity. While Knowledge level of the students regarding other psychological factor was ranging between 25.5% and 48.5% as precipitating factors leading to overweight & obesity contributing factor.

Table 7: Self-Reported knowledge of studied sample about obesity related psychological factors.

Knowledge Item	N =200 N	N =200 %	*P* Value x^2-Test
Irritability	51	25.5	0.031
Studying for long periods	58	29	0.002
Anxiety	114	57	<0.001
Depression	74	37	<0.001
Nervousness	74	37	<0.001
Happiness	97	48.5	0.037
Improvement in studying	81	40.5	0.005
Lateness in studying	95	47.5	0.033
Teacher poor relations	89	44.5	<0.001
Family poor relations	92	46.0	<0.001
Friends formulation	76	38.0	<0.001
Loneliness	105	52.5	0.034
Boring	82	41	0.021

As shown in figure (1), total mean score for students' knowledge was 1.6 which indicates a good knowledge level for the participants that consider eating habit as one of the contributing factors to obesity. Also, this figure indicated that there were statistically significant p (<0.001) related to total score of physical activities.

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Figure 1: Total mean score of student's knowledge of studied sample obesity related nutritional facts, eating habits and physical activity.

3.4 Part IV: Correlation between Body Mass Index factors contributing to overweight.

Table (8) revealed that there was statistically significant negative correlation between studied students' BMI and their total knowledge score related to eating habits.

Table 8: Correlation between studied students' body mass index and their total knowledge score related to eating habits.

BMI	Total	Total knowledge related to eating habits	r*
	No	Mean ±SD	
Underweight	22	1.60±0.783	-0.17
Normal weight	124		-0.33
Overweight	41		-0.55
Obese	13		-0.69

Results of table (9) showed that there was negative statistically significant correlation between studied students' BMI and their total knowledge score related to activity factors.

Table 9: Correlation between BMI of studied students and their total knowledge score related to activity factors.

BMI	Total	Total Score For Physical Activity Factors	r*
	No	Mean ±SD	
Underweight	22	1.71±0.605	-0.18
Normal weight	124		-0.24
Overweight	41		-0.76
Obese	13		-0.76

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Table (10) results showed that there was positive statistically significant correlation between studied students' total knowledge score related to psychological factors and their body mass index.

Table 10: Correlation between BMI of studied sample and their total knowledge score related to psychological factors.

BMI	Total	Total Score Psychological Factor	r*
	No	Mean ±SD	
Underweight	22	1.29±0.657	0.34
Normal weight	124		0.39
Overweight	41		0.72
Obese	13		0.71

This table (11) had revealed that there was negative statistically significant correlation between total knowledge score of the studied sample and their Body Mass Index.

Table 11: Correlation between BMI of studied sample and their total knowledge score.

BMI	Total	Total knowledge score	r*
	No	Mean ±SD	
Underweight	22	1.38±042	-0.32
Normal weight	124		-0.27
Overweight	41		-0.63
Obese	13		-0.71

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

Obesity is a health trouble in which extra amount of has collected in the body with an undesirable effect on health. Moreover, obesity rises the likelihood of several diseases and conditions, particularly depression, cardiovascular diseases, type 2 diabetes, osteoarthritis, and definite types of cancer (ABS, 2010).

Our results provided an overview of a high prevalence of overweight and obesity among adolescent females in Jouf University. Overweight prevalence rate in females was 21% while the obesity prevalence rate was 7%.

In Saudi Arabia, the National Growth Study indicated that the prevalence rate of obesity between children and adolescents increased (El-Mouzan, 2010; Musaiger, 2011). Also, in a study conducted by Al-Othaimeen (2007), it was found that the prevalence rate of overweight and obesity among adolescent females (18-21 years) was 30.4%. Another study had observed that there was 23.3% prevalence rate of overweight among adolescent females (Al-Turki, 2007; Abolfotouh *et al*., 2012).

A previous study by Alharbi & Robert (2017) who reported that overweight and obesity have a potent relationship with socio-demographic factors in Jeddah City, KSA.

The present study described that there is a significant link between participants age and their body mass index (BMI) (P=0.017). This could be referred to the age group (19 years) since they were the highest registered group when distributing the sample according to means of their body weight.

In agreement with the results attained in our study, Memish (2014) found that overweight and obesity is higher among less educated individuals, and concluded that with higher education level the individual could be making healthier choices that reflect on their body composition, and could improve their health profile of themselves and their children. Furthermore, Truong & Sturm (2005) reported that the body mass index was higher among adults in the lowest income group due to the high cost of healthy food compared to other types of food.

Knowledge assessment results had indicated that lack of physical activity factor is highly reported by the participants as a contributing factor to overweight and obesity which is in agreement with the result reported by Ladabaum *et al*., 2014; Alharbi *et al*., 2017. Both psychological and nutritional factor were moderately reported by the participants as overweight and obesity contributing factors. Also, eating habits as a factor affecting overweight prevalence were reported moderately as well by the participants, which is in agreement with Faris *et al*., (2014).

In addition, the Kingdom's National Nutrition Survey indicated the variable dietary favourites of the Saudi population towards eating non-nutritional and high- calorie snacks like fried foods and carbonated drinks commonly in a day to day life (Ladabaum *et al*., 2014). These variations reflect the shifting socio-environmental circumstances which can predispose young adults to obesity. Only insufficient research is accessible from KSA region which focused on dietary and other lifestyle behaviour patterns among young adults (Al-Rethaia *et al*., 2010; Al-Nuaimr *et al*., 2012). All the researches raise alarm for increasing sedentary lifestyle and stopping fast food (Ramasam *et al*., 2018).

Our results are well-matched with a study conducted by Al-Rukban (2003) that assessed the knowledge level among male adolescents in Riyadh city and found that there is a high reporting to the insufficient of physical activity as a contributing reason to overweight and obesity.

Nutritional factors knowledge assessment showed moderate knowledge level at the participants, which concludes that the overall nutrition knowledge did not diverge between the study groups (normal weight, overweight, and obese), this suggests that the absence of nutritional knowledge does not appear to be a cause of obesity in adolescent females. These results are consistent with the results of a study conducted by Reinehr (2001), who found that nutritional knowledge deficiency is not correlated with overweight prevalence among adolescents. Moreover, study findings are compatible with Faris *et al*. (2014) study who found that total nutrition awareness did not change within obese and non-obese adult college students.

Finally, Knowledge assessment of the study participants regarding overweight and obesity complications had resulted in a very good level of knowledge for the participants since they could identify the possible future complications.

5.2 Conclusion

Based on the study finding we can deduce that there is a powerful association between absence of physical activity, wrong food habits and the prevalence of obesity among adolescent females

in Jouf University. Also, there is a marked defect in students' knowledge about the effect of physiological factors on weight, although these females are more exposed to physiological changes in this adolescence period.

5.3 Recommendations:

Based on the outcomes of the current study, the following recommendations can be suggested:

Periodic and continuous knowledge assessment about diabetes should be performed by authorized personnel to face the problem growth rate. Different programs about health education should be implemented in all sectors of the community to promote knowledge level about obesity prevention methods.

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