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PREVALENCE OF DYSLIPIDEMIA

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Abstract:

Background: *Obesity is a chronic health problem that is associated with several diseases and conditions including dyslipidemia. Dyslipidemia is the disruption of body lipids, which in turn associated with the development of several disease including cardiovascular diseases. Obesity prevalence is increasing and as a result dyslipidemia is rising.*

Aim: *To assess the prevalence of dyslipidemia among obese patients.*

Methods: *This present study included 250 individuals, 150 of them were obese and 10 were non-obese. The parameters of dyslipidemia were investigated for all participants.*

Results: *The present study included 2 groups of participants, 40% were non-obese individuals and 60% were obese patients. There were significant differences (P-value <0.05) regarding total cholesterol, LDL, HDL and triglycerides among the two groups. Also there were significant differences among the two groups regarding different types of dyslipidemia.*

Conclusion: *The prevalence of dyslipidemia was high among obese patients and the most common type of dyslipidemia was hypercholesterolemia.*

Keywords: *Dyslipidemia, prevalence of dyslipidemia, Obese patients, Types of dyslipidemia.*

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INTRODUCTION:

Obesity is an independent risk factor for several diseases including type 2 diabetes mellitus, dyslipidemia, and coronary artery diseases [1]. Body mass index (BMI) is the most beneficial measurement of obesity, normal weight individuals has BMI of range of 18.5-24.9, overweight individuals have BMI of 25-30, whereas obese individuals have BMI above 30 [1]. The prevalence of obesity in several Saudi study was reported to be in the range of 13%-50% [2-6]. Dyslipidemia is lipids disruption [7], it acts as a risk factor for several chronic diseases which result in morbidity and mortality around the world [8-10], such as type 2 diabetes [11,12], stroke development [13], and artherosclerosis [14]. Dyslipidemia prevalence differs according to cultural characteristics of the population, socioeconomics and ethnicity [15]. The prevalence of dyslipidemia is raising globally. Hyperdyslipidemia is the most dyslipidemias that involves increase in the level of cholesterol and /or triglycerides, or low level of HDL[16-18]. The global prevalence of dyslipidemia was estimated to range from 2.7% to 51.9% [19-21]. Dyslipidemia became apparent in Saudi Arabia as result of changes in lifestyle, dietary and sociodemographics recently [22]. The prevalence in Saudi Arabia was reported to be ranges from 20%-44% [15]. The present study was conducted to assess the prevalence of dyslipidemia among obese individuals.

SUBJECTS AND METHODS:

The study was conducted in jazan city between the period from September 2018 to November 2018. This study included two groups of individuals, 100 healthy individuals and 150 obese patients. Exclusion criteria of obese patients included suffering of renal or thyroid diseases, being on steroid therapy, alcoholic and smokers as well as postmenopausal women. Routine physical examination was performed for all participants and several parameters were assessed including, Total cholesterol, LDL, HDL and triglycerides.

STATISTICAL ANALYSIS:

SPSS program version 16.0 was used to analyze data. Results were represented as frequencies and percent for qualitative data and standard deviation for quantitative data. P-value at <0.05 was considered statistically significant.

RESULTS:

The present study included 250 participants, who were divided into 2 groups the non-obese group and obese group, non-obese group included 100 (40%) individuals, while obese group included 150 (60%) patients, figure1 , there was equal ratio of males and females in this study 1:1. The age range of participants was 30-65 years old. Total cholesterol, LDL, HDL and triglycerides were assessed in individuals in this study, the mean ± SD of each parameter is shown in table1. The mean ± SD of total cholesterol in non obese participants was 190±15.2mg/dl, while in obese individuals it was 245±16.5 mg/dl (P-value=0.02). The mean ± SD of LDL in non obese persons and obese patients was 115.7± 6.4mg/dl and 170.3± 9.7 mg/dl respectively (P-value=0.01). The mean ± SD of HDL level for non-obese individuals was 112.9± 4.2mg/dl and for obese patients was 162.7± 4.8 mg/dl (P-value=0.014). The mean ± SD of Triglycerides for non-obese and obese participants was 110±4.2 mg/dl and 160±5.6 mg/dl respectively (P-value=0.021). The distribution of participants in both groups regarding the 4 parameters according to dyslipidemia prevalence is shown in table2. There were significant differences between the two groups regarding the prevalence of dyslipidemia according to the 4 different parameters levels.

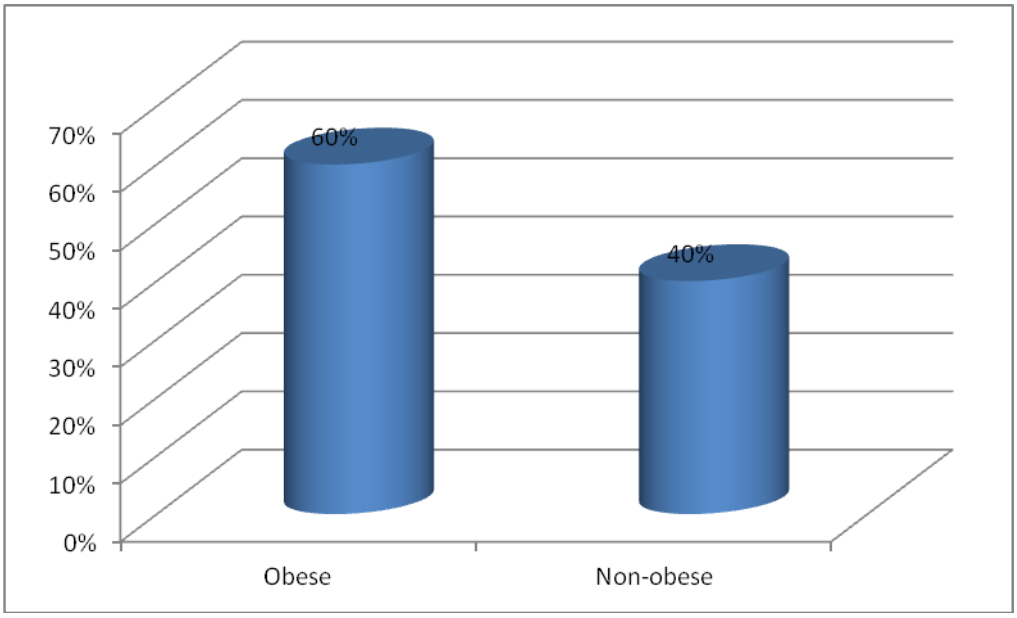

Fig1: Prevalence of obesity among participants

Table1: The mean values of different parameters in participants

Parameters	Non-obese Mean ± SD	Obese Mean ± SD	P-value
Total cholesterol (mg/dl)	190±15.2	245±16.5	0.02
LDL (mg/dl)	115.7±6.4	170.3±9.7	0.01
HDL (mg/dl)	112.9±4.2	162.7±4.8	0.014
Triglycerids (mg/dl)	110±4.2	160±5.6	0.021

Table2: Distribution of participants regarding the level of the 4 parameters in the two groups according to prevalence of dyslipidemia

Variables	**Obese (150) N (%)**	**Non-Obese (100) N (%)**	**P-value**
Total cholesterol (TC)			**0.01**
<200 mg/dl	30(20%)	60(60%)	
>200 mg/dl	120(80%)	40(40%)	
LDL			**0.02**
<100 mg/dl	28(18.7%)	56(56%)	
>100 mg/dl	122(81.3%)	44(44%)	
*HDL			**0.01**
Low	90(60%)	66(66%)	
Normal/ High	60(30%)	34(34%)	
Triglyceride			**0.01**
<150 mg/dl	40(26.7%)	75(75%)	
>150 mg/dl	110(73.3%)	25(25%)	

* HDL considered low in case of<40mg/dl in men and <50mg/dl in women.

DISCUSSION:

In the current study the prevalence of obesity was 60% among 250 participants. This percent was in agreement with that reported in a previous Saudi study [23], where the obesity prevalence was 60%, while another Saudi study [5] reported lower percent where the prevalence ranged from 34%-40%. The prevalence of obesity among Kuwaiti students was found 19.8% [7]. In this study, the mean levels of total cholesterol, LDL, HDL and triglycerides were significantly higher in obese patients than in non-obese individuals. These findings were in agreement with several previous studies, one Saudi study [23] reported that the mean levels of cholesterol, LDL and triglycerides were higher in obese patients than normal persons, another study [24] reported the increase in cholesterol and LDL in obese patients than non-obese ones. Two previous studies [1,25] reported increase in the triglycerides level among obese patients than non-obese individuals. There are several types of dyslipidemia, hyperchloesterolimea which involves the elevation of cholesterol level more than 200mg/dl or elevation of LDL level more than 100 mg/dl, whereas the other type called hypertriglyceridemia involves the elevation of triglycerides level more than 150 mg/dl and low HDL level which is referred when HDL level is less than 50mg/dl in females and 40 mg/dl in males. The presence of more than one abnormal lipid component refers to mixed hyperdyslipidemia [26]. In the current study, there were significant differences among the two groups regarding the level of cholesterol >200mg/dl, LDL>100 mg/dl, triglycerides> 150mg/dl as well as Low HDL. The prevalence of dyslipidemia ranged from 60% to 81.3%. Our study showed that the most common type of dyslipidemia was hypercholesterolimea among obese patients, where there were 80% and 81.3% of obese patients had total cholesterol level >200 mg/dl and LDL level >100 mg/dl respectively, which refers presence of hypercholesterolimea. Moreover, our study showed that in obese patients there were increases in total cholesterol, LDL and triglycerides, whereas the lower HDL was more common in non-obese individuals. In a previous Saudi study [23] the prevalence of dyslipidemia among obese individuals ranged from 55.6% to77.78%, showing lower prevalence than our study, with higher prevalence of hypertriglyceridemia which was in contrast to our findings, but the author reported that total cholesterol, LDL and triglyceride elevation was more associated with obese patients, whereas low HDL was associated with non-obese individuals which was in agreement with our results. Chinese study [27] reported higher prevalence of hypertriglyceridemia and low HDL, whereas in Kuwaiti study [28] it was found that 75% of adults attending the lipid clinics were suffering either hyperlipidemia or hypertriglyceridemia. A study from India [29] it was found that total cholesterol, LDL and triglycerides were significantly higher among individuals with high BMI than those with normal BMI which was in agreement with our study, whereas in contrast to our findings, the previous Indian study [29] showed that HDL didn't differ significantly among the two groups.

CONCLUSION:

The prevalence of dyslipidemia among obese individuals was high. All types of dyslipidemia were associated with obesity, whereas low HDL was associated with normal individuals, the most common type of dyslipidemia was hypercholesterolemia.

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