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INVESTIGATION OF THE IMPACTS OF GENDER AND BODY MASS INDEX ON DYSLIPIDEMIA AMONG DIABETIC PATIENTS TREATED IN OUT CLINICS AT ROYAL MEDICAL SERVICES, JORDAN

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ABSTRACT:

Introduction: Diabetes is associated aspects metabolic disorder such as dyslipidemia.

Study objectives: The main objective of this study was to investigate the impact of BMI and gender on the occurrence of dyslipidemia in diabetic patients treated outpatient clinics in Royal Medical services, Jordan.

Methods and subjects: This study was a retrospective study. A total of 62 profiles of diabetic patients were included. The following variables were included in the study: age, gender, BMI, and status of dyslipidemia. A working excel sheet was created to make raw data of all participants. The statistical analysis was carried out using SPSS version 21. Data representation included means, standard deviations, and frequencies and percentages. The relationships between variables were computed using Chi-Square tests, One Way Anova, and Pearson Correlation. Significance was considered at $\alpha \leq 0.05$.

Study findings: The prevalence of dyslipidemia was about 60%. No significant relationships were found between dyslipidemia and study variables.

Conclusion: The results of the present study did not agree with most studies in existing literature which implies that further studies using large numbers of participants are required to generalize the results.

KEYWORDS: Diabetes, Dyslipidemia, gender, BMI, risk factors.

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INTRODUCTION

Diabetes mellitus is considered a chronic disease with a chronic nature resulting from insulin deficiency or insulin resistance ending with hyperglycemia, which is associated with metabolic disorders of lipids, carbohydrates, and proteins[1-3].

According to estimates of the International Diabetes Federation, approximately 425 million adults (20-79 years) suffer from diabetes in 2017, and it is expected that this number to reach 629 million by 2045[4].

Dyslipidemia is considered as a significant risk factor for heart diseases. The diagnosis of dyslipidemia depends on increased levels of cholesterol, triglyceride, accompanied by diminished levels of high-density lipoprotein cholesterol. Anyhow, increased risk ofischemic stroke has been associated with dyslipidemia. Furthermore, it has been observed that there is an increased risk of mortality associated with cardiovascular diseases among patients with type 2 diabetes mellitus (T2DM)[5-7].

Epidemiological studies pointed out to the occurrence of dyslipidemia in 53% of Americans[8]. Other studies conducted in middle-income Asian countries showed the prevalence of dyslipidemia in the range 78% in 2004 to 66.5% in 2009 among population of Thailand[9, 10].

The relationship between dyslipidemia and body mass index (BMI) was shown to be significant[11]. Studies have provided evidence regarding the association of dyslipidemia with a high BMI[12, 13]. BMI is considered as the most commonly used measurement predicting health risk related to weight status[14].

Gender was significantly correlated with dyslipidemia[11]. In a recent study by Milyani and Al-Agha[15], no significant relationship was proved between dyslipidemia and gender.

OBJECTIVES

The main objective of this study was to investigate the impact of BMI and gender on the occurrence of dyslipidemia in diabetic patients treated outpatient clinics in Royal Medical services, Jordan.

METHODS AND SUBJECTS

Study design and setting:

This study was a retrospective and conducted in Royal Medical Services.

Study sample:

A total of 62 diabetic patients were included in this study.

Study variables:

The following variables were included in the present study: age, BMI, gender, and dyslipidemia.

Study procedure:

Files of diabetic patients were reviewed. Files included required variables were selected to be analyzed. A working excel sheet was created to make raw data. After completing of entering data into excel sheet, the analysis of data was accomplished using the software, SPSS 21. Data presentation took various styles as means and standard deviations, frequency and percentages. The relationships between variables were investigated through Chi-Square test, One Way Anova, and Pearson correlation. Significance was considered at $\alpha \leq 0.05$.

RESULTS

Table 1 shows the general characteristics of study participants. Mean age of participants was 61±12 years. The mean of BMI was 32±12. Slightly more than 50% of participants were males (about 53%). About 60% of patients had dyslipidemia.

Table 1: General characteristics of study participants

Variable	Description
Age (M±SD) years	**61±12**
BMI	**32±21**
Gender (N, %):	
- Males	**33 (53.2%)**
- Females	**29 (46.8%)**
Dyslipidemia (N, %):	
- **Yes**	**37 (59.7%)**
- **No**	**25 (40.3%)**

The impact of study variables including gender, BMI, and age on dyslipidemia was computed using One Way Anova. The results, as included in table 2, did not reveal any positive impact of studied variables on dyslipidemia (p>0.05).

Table 2: The impact of study variables on dyslipidemia

		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	18.896	1	18.896	0.130	0.720
	Within Groups	8729.959	60	145.499		
	Total	8748.855	61			
Gender	Between Groups	0.114	1	0.114	0.448	0.506
	Within Groups	15.321	60	.255		
	Total	15.435	61			
BMI	Between Groups	127.784	1	127.784	0.289	0.593
	Within Groups	26575.231	60	442.921		
	Total	26703.015	61			

The relationship between the gender and status of dyslipidemia was investigated through Chi-Square testing. Among males with diabetes, 48% had dyslipidemia, and 52% of diabetic females had dyslipidemia. The results did not show a significant relationship between gender and dyslipidemia (p=0.638) (table 3).

Table 3: The relationship between gender and dyslipidemia

			Dyslipidemia		Total	P value
			No	Yes		
Gender	Male	Count	12	21	33	0.638
		% within gender	36.4%	63.6%	100.0%	
		% within Dyslipidemia	48.0%	56.8%	53.2%	
		% of Total	19.4%	33.9%	53.2%	
	Female	Count	13	16	29	
		% within gender	44.8%	55.2%	100.0%	
		% within Dyslipidemia	52.0%	43.2%	46.8%	
		% of Total	21.0%	25.8%	46.8%	
Total		Count	25	37	62	
		% within gender	40.3%	59.7%	100.0%	
		% within dyslipidemia	100.0%	100.0%	100.0%	
		% of Total	40.3%	59.7%	100.0%	

Correlation between study variables was studied using Pearson correlation. No significant correlations were found among all variables (p>0.05) (table 4).

Table 4: Correlation between study variables

		Age	Gender	BMI	Dyslipidemia
Age	**Pearson Correlation**	**1**	**0.004**	**-.101-**	**0.046**
	Sig. (2-tailed)		**0.977**	**0.433**	**0.720**
	N	**62**	**62**	**62**	**62**
Gender	**Pearson Correlation**	**0.004**	**1**	**-.108-**	**0-.086-**
	Sig. (2-tailed)	**0.977**		**0.403**	**0.506**
	N	**62**	**62**	**62**	**62**
BMI	**Pearson Correlation**	**-.101-**	**-.108-**	**1**	**0.069**
	Sig. (2-tailed)	**0.433**	**0.403**		**0.593**
	N	**62**	**62**	**62**	**62**
Dyslipidemia	**Pearson Correlation**	**0.046**	**-.086-**	**.069**	**1**
	Sig. (2-tailed)	**0.720**	**0.506**	**0.593**	
	N	**62**	**62**	**62**	**62**

DISCUSSION

The present study aimed to investigate if the both gender and BMI have positive impacts on dyslipidemia in diabetic patients treated in out clinics at Royal medical services, Jordan.

The data of our results showed that the prevalence of dyslipidemia among diabetic patients was about 60%. Actually, this is still lower than the prevalence of dyslipidemia in other Asian countries like Thai population whose dyslipidemia prevalence ranged from 66.5% to 78% [9, 10]. Concerning studies from America, the prevalence of dyslipidemia in our study is higher than that reported in America, in which the reported dyslipidemia prevalence was 53%[8]. We think that the awareness of physicians who are treating patients in addition to the availability of lipid lowering drugs may explain the difference in dyslipidemia prevalence. We also think that lack of physical activity helps in increased prevalence of dyslipidemia.

Using various statistical styles including Chi-Square, One Way Anova, and Pearson correlation did not provide any significant impact of age, gender, and BMI on dyslipidemia. Our results did not agree with other studies that significant impact of BMI on dyslipidemia[11-14]. It is plausible to explain these findings by taking into consideration that the mean BMI in our study was not elevated as compared with previous studies[11-14].

Gender was also significantly with dyslipidemia in other studies [11-14], but a recent study did not show a significant relationship between gender and dyslipidemia[15], which supports our findings. We think that due to lack of large number of participants in this study, the relationship between gender and dyslipidemia may be not able to be generalized.

CONCLUSION

The present study showed that the prevalence of dyslipidemia in diabetic patients was about 60%, and this was not affected by gender and BMI.

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