

ORIGINAL RESEARCH



THE EFFECT OF ASPIRIN TREATMENT ON LIPID PROFILE IN DIABETIC PATIENTS WHO ATTEND JORDANIAN ROYAL MEDICAL CITY

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ABSTRACT:

Introduction: Diabetes is associated with abnormalities in lipid profile. The treatment with aspirin may have regulatory effects in lipid profile and accordingly may help in protecting against metabolic abnormalities associated with diabetes.

Study objective: To explore the impact of aspirin treatment on dyslipidemia in diabetic patients who attend out-clinics of Jordanian Royal Medical Services.

Methods and subjects: This study was based on the retrospective design to collect data from files of diabetic patients. Data was collected from appropriate files in which the required information is provided. Study variables include demographic variables such as gender and age; clinical variables related to diabetes such as duration, aspirin treatment, and lipid profile. Data were gathered and analyzed using SPSS version 21. Statistical analyses such as descriptive statistics were used. The relationship between study variables was analyzed as required such as Chi-square, and One way Anova. Significance was examined at $\alpha \leq 0.05$.

Results: The study included 62 diabetic patients. The mean age of participants was 56.95 ± 11.98 years. About 53% of participants were males. Duration of diabetes was 7.51 ± 5.86 years. Fifty percent of participants used aspirin; the mean aspirin dose was 111.36 ± 24.67 mg. about 60% of patients had dyslipidemia. The mean level of cholesterol was 217.70 ± 51.58 mg/dl, while the mean level of TG was 246.94 ± 172.40 mg/dl, and that of HDL was 45.89 ± 13.027 mg/dl, and that of LDL was 118.32 ± 41.33 mg/dl. Dyslipidemia was not significantly associated with gender or aspirin use. Using One Anova test, dyslipidemia was significantly associated with diabetes duration ($p=0.05$), cholesterol level ($p=0.029$), and aspirin dose ($p=0.016$).

Conclusions: The present study showed a significant relationship between dyslipidemia and aspirin use, diabetes duration, and aspirin dose.

Keywords: Diabetes, Dyslipidemia, Aspirin, Cholesterol, Triglyceride.

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INTRODUCTION:

Studies have reported increased prevalence of diabetes over time, which confirmed the need of introducing new prevention and appropriate therapies to minimize the occurrence of cardiovascular events among diabetics. The first important approach is to control blood glucose to minimize microvascular changes related to diabetes. Furthermore, appropriate lipid control is considered crucial to decrease the incidence of cardiovascular events among diabetics¹⁻⁴.

The study of Al-Nsour and Alkhatib⁵ showed that the synthesis of aspirin has begun since 1897. The structure of Aspirin is chemically simple which involves a benzene ring attached to an acetyl group and a carboxylic acid group⁶. Aspirin is called acetylsalicylic acid and it belongs to non-steroidal anti-inflammatory drugs (NSAIDs)⁷. Aspirin has been shown to exhibit different therapeutic properties such as analgesic, anti-pyretic, anti-thrombotic and anti-inflammatory⁸.

Several studies have proved the efficacy of using aspirin treatment in reducing the incidence of cardiovascular disease (CVD) among high-risk patients who had no preexisting CVD^{1-2, 4, 9-12}. Another study indicated that aspirin therapy was able to reduce the risk for coronary heart disease up to 28%¹³.

STUDY OBJECTIVES:

To explore the impact of aspirin treatment on dyslipidemia in diabetic patients who attend out-clinics of Jordanian Royal Medical Services.

METHODS AND SUBJECTS:

Study design: This study was based on the retrospective design to collect data from files of diabetic patients.

Study sample: A total of 62 diabetic patients were included.

Data collection:

Data was collected from appropriate files in which the required information is provided.

Study variables include demographic variables such as gender and age; clinical variables related to diabetes such as duration of diabetes, aspirin treatment, and lipid profile. Data were gathered and analyzed using SPSS version 21. Statistical analyses such as descriptive statistics were used. The relationship between study variables was analyzed as required such as Chi-square, and One Way Anova. Significance was examined at $\alpha \leq 0.05$.

RESULTS:**General characteristics of participants**

As shown in table 1, the study included 62 diabetic patients. The mean age of participants was 56.95+11.98 years. About 53% of participants were males. Duration of diabetes was 7.51+5.86 years. Fifty percent of participants used aspirin; the mean aspirin dose was 111.36+24.67 mg. about 60% of patients had dyslipidemia. The mean level of cholesterol was 217.70+51.58 mg/dl, while the mean level of TG was 246.94+172.40 mg/dl, and that of HDL was 45.89+13.027 mg/dl, and that of LDL was 118.32+41.33 mg/dl.

Table 1: General characteristics of participants

Variable	Description
Age (M±SD) years	56.95±11.98
Gender (N, %):	
- Males	33 (53.2%)
- Females	29 (46.8%)
Duration of diabetes (M±SD) years	7.51±5.86
Aspirin use (N, %)	
- Yes	31 (50%)
- No	31 (50%)
Aspirin dose (M±SD) mg	111.36±24.67
Dyslipidemia (N, %)	
- Yes	37 (59.7%)
- No	25 (40.3%)

Cholesterol (M+SD) mg/dl	217.70+51.58
TG (M+SD) mg/dl	246.94+172.40
HDL (M+SD) mg/dl	45.89+13.027
LDL (M+SD) mg/dl	118.32+41.33

The relationship between dyslipidemia and study variables: As shown in table 2, dyslipidemia was not

associated significantly with gender (p=0.606), or aspirin use (p=0.50).

Table 2: The relationship between dyslipidemia and study variables (based on Chi-Square test)

Variable	Dyslipidemia				P value
	Yes		No		
	N	%	N	%	
Gender:					0.606
- Males	21	63.6	12	36.4	
- Females	16	55.2	13	44.8	
Aspirin use:					0.500
- Yes	18	58.1	13	41.9	
- No	19	61.3	12	38.7	

Predictors of dyslipidemia:

Using One Way Anova Test, we tested predictors of dyslipidemia among study variables. The following

variables were significantly associated with dyslipidemia: diabetes duration (p=0.05), cholesterol level (p=0.029), and aspirin dose (p=0.016) (table 3).

Table 3: predictors of dyslipidemia (based on One Way Anova)

		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	.114	0.448	0.506
	Within Groups	15.321	60	.255		
	Total	15.435	61			
Diabetes duration	Between Groups	130.956	1	130.956	4.000	0.050
	Within Groups	1964.290	60	32.738		
	Total	2095.246	61			
Aspirin	Between Groups	0.017	1	.017	0.065	0.800
	Within Groups	15.483	60	.258		
	Total	15.500	61			
Cholesterol	Between	12436.102	1	12436.102	4.981	0.029

	Groups					
	Within Groups	149796.672	60	2496.611		
	Total	162232.774	61			
TG	Between Groups	12999.275	1	12999.275	0.433	0.513
	Within Groups	1800100.467	60	30001.674		
	Total	1813099.742	61			
HDL	Between Groups	313.174	1	313.174	1.875	0.177
	Within Groups	8851.236	53	167.004		
	Total	9164.410	54			
LDL	Between Groups	4879.590	1	4879.590	2.965	0.091
	Within Groups	83943.957	51	1645.960		
	Total	88823.547	52			
Aspirindose	Between Groups	3262.607	1	3262.607	6.853	0.016
	Within Groups	9521.484	20	476.074		
	Total	12784.091	21			

The relationship between aspirin dose and study variables: Using One Way Anova test, we examined the relationship between aspirin dose and study

variables. As shown in table 4, dyslipidemia was the only variable to be significantly associated with aspirin dose (p=0.016).

Table 4: the relationship between aspirin dose and study variables (Based on One Way Anova)

		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	20.003	1	20.003	0.117	0.736
	Within Groups	3422.361	20	171.118		
	Total	3442.364	21			
Gender	Between Groups	.646	1	0.646	2.909	0.104
	Within Groups	4.444	20	0.222		
	Total	5.091	21			
Diabetes duration	Between Groups	50.919	1	50.919	1.371	0.255
	Within Groups	742.944	20	37.147		
	Total	793.864	21			
Aspirin use	Between Groups	.124	1	0.124	0.476	0.498
	Within Groups	5.194	20	0.260		
	Total	5.318	21			
Cholesterol	Between Groups	3528.091	1	3528.091	1.117	0.303
	Within Groups	63157.000	20	3157.850		
	Total	66685.091	21			
TG	Between Groups	19586.427	1	19586.427	0.336	0.568
	Within Groups	1164319.028	20	58215.951		
	Total	1183905.455	21			

HDL	Between Groups	92.450	1	92.450	0.620	0.441
	Within Groups	2682.368	18	149.020		
	Total	2774.818	19			
LDL	Between Groups	137.813	1	137.813	0.086	0.773
	Within Groups	28945.938	18	1608.108		
	Total	29083.750	19			
Dyslipidemia	Between Groups	1.114	1	1.114	6.853	0.016
	Within Groups	3.250	20	0.163		
	Total	4.364	21			

DISCUSSION: The results of the present study showed that dyslipidemia was associated significantly aspirin dose ($p=0.016$), cholesterol ($p=0.029$), and diabetes duration ($p=0.05$). Accordingly, aspirin has potential therapeutic effects in reducing dyslipidemia and offers protection against possible heart problems associated with diabetes. The importance of these findings comes from the considerations that diabetes has increased

prevalence and it is associated with complications such as heart disease¹⁻⁴. Our findings have confirmed the beneficial effects of aspirin including cardiovascular diseases^{1-2, 4, 9-12}. Other beneficial effects included anti-inflammatory properties⁸.

CONCLUSION: The present study showed a significant relationship between dyslipidemia and aspirin use, diabetes duration, and aspirin dose.

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