

ORIGINAL RESEARCH

**STUDYING THE EFFECT OF ASPIRIN TREATMENT ON DIABETIC NEUROPATHY AMONG DIABETIC PATIENTS ATTENDING JORDANIAN ROYAL MEDICAL CITY****Taghreed A. Al-Refai¹, Raeda Abdel Wahab Al Madadha¹, Ala'AldeenTaha Salem Alfaqara¹, Bayan Ahmad Althwaib¹, Reem Ibrahim Mahadeen¹, Fadi Jamal AlNimri¹, Jaafar AbuAbeeleh¹, Ahed J Alkhatib^{2,3*}**¹Royal Medical Services, Jordan²Department of legal medicine, Toxicology of Forensic Science and Toxicology, School of Medicine, Jordan University of Science and Technology, Jordan³Council for Nutritional and Environmental Medicine, Mo i Rana, Norway**Submitted on: 30.05.17; Revised on: 08.06.17; Accepted on: 10.06.17****ABSTRACT:****Introduction:** Diabetes is associated with the involvement of defects in the nervous system which leads to diabetic neuropathy. Treatment with aspirin has been associated with improvement of several diseases.**Objectives:** To study the impact of using aspirin treatment on diabetic neuropathy.**Methodology:** This is a retrospective study. Files of diabetic patients were reviewed. Files were included if neuropathy is involved and aspirin treatment is indicated. Data were gathered from files of patients visiting internal medicine outclinics at royal medical services. Study variables included gender, age, diabetic duration, aspirin treatment, and diabetic neuropathy. The data was entered into working excel sheets and once completed were analyzed using SPSS version 20. Several statistical analyses were included such as frequency, percentage, mean, standard deviation, Chi-square, and T-test. Significance was accepted at alpha level <0.05.**Results:** The findings of the present study showed that the prevalence of diabetic neuropathy was 25.8%. The mean age of diabetic patients was 56.95±11.97 years. Half of patients were reported to use aspirin treatment. The mean of duration diabetes was 7.51±5.86 years. The mean of aspirin dose was 111.37±24.67 mg. Males were more likely to develop diabetic neuropathy compared with females, but this was not statistically significant (p>0.05). Patients using aspirin treatment were less likely to develop diabetic neuropathy, but this was not statistically significant (p>0.05).**Conclusion:** Although it was not statistically significant, male were more likely to develop diabetic neuropathy, whereas aspirin using patients were less likely to develop diabetic neuropathy.**KEYWORDS:** Diabetes, Diabetic neuropathy, Aspirin, Aspirin dose.**Corresponding Author: Jaafar Abu Abeeleh**
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INTRODUCTION:

Diabetes mellitus (DM) is the most prevalent metabolic disease in the world and it has been estimated that about 382 million people were diabetic in 2013, and this number is expected to rise to 592 million by 2035. Diabetes is usually associated with complications including diabetic neuropathy (DN)¹.

DN results from damage in peripheral nerves. An example illustrating DN is feet nerve damage which is attributed to poor circulation that leads to a variety of foot complications².

DN impacts more than 50–60% of diabetic patients and is considered the main cause of non-traumatic amputation and anatomic failure^{3,4}. The possibility to develop nerve troubles among diabetics is likely to occur at any time, but the possibility is increased with increasing duration of diabetes⁵⁻⁸.

Studies have confirmed that glycemic control helps in reducing the occurrence and progression of diabetic neuropathy, but the efficacy of this trend is not well satisfied⁹.

Aspirin has been reported to be effective treatment to offer protection for cardiovascular system as either in non-diabetic or diabetic persons¹⁰. Other therapeutic benefits of aspirin have also been demonstrated including tPA inhibition and antiplatelet function¹¹. In their study, Alnsour and Alkhatib¹² showed several benefits for using aspirin as anti-inflammatory, analgesic and anticancer properties.

In their study, Bhatt and Veeranjanyulu¹³ showed that the treatment of diabetic rats, which were stimulated to develop diabetic neuropathy, with both minocycline and aspirin was able to improve various parameters related to diabetic neuropathy including sensory nerve conduction velocity (SNCV), motor nerve conduction velocity (MNCV) hot plate latency and tail flick latency compared with control group.

Micov *et.al*¹⁴ showed that there was a synergism between levetiracetam and Ibuprofen

/aspirin/paracetamol employing a model of painful diabetic neuropathy, the results were promising and it is possible to introduce a useful approach to treat patients with painful diabetic neuropathy.

STUDY OBJECTIVE: To study the impact of using aspirin treatment on diabetic neuropathy.

METHODS AND SUBJECTS:

Study design: This is a retrospective study.

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

Study procedure: Files of diabetic patients were reviewed. Files were included if neuropathy is involved and aspirin treatment is indicated. Data were gathered from files of patients visiting internal medicine outclinics at royal medical services.

Stud variables: Study variables included gender, age, diabetic duration, aspirin treatment, and diabetic neuropathy.

Statistical analysis: The data was entered into working excel sheets and once completed were analyzed using SPSS version 20. Several statistical analyses were included such as frequency, percentage, mean, standard deviation, and Chi-square. Significance was accepted at alpha level <0.05.

RESULTS:**General characteristics of participants**

As shown in table 1, the mean age of diabetic patients who participated in this study was 56.95±11.97 years. The study included 62 diabetic patients, of them there were 53.2% males. Half of patients were reported to use aspirin treatment. The mean of duration diabetes was 7.51±5.86 years. The mean of aspirin dose was 111.37±24.67 mg. The prevalence of neuropathy was 25.8%.

Table 1: general characteristics of participants

Variable	Description
Age (M±SD) years	56.95±11.97
Gender (N, %):	
- Males	33 (53.2%)
- Females	29 (46.8%)
Aspirin use (N, %):	
- Yes	31 (50%)
- No	31 (50%)

Duration of diabetes (M±SD) years	7.51±5.86
Aspirin dose (M±SD) mg	111.37±24.67
Diabetic neuropathy (N, %):	
- Yes	16 (25.8%)
- No	46 (74.2%)

The relationship between diabetic neuropathy and study variables:

Using Chi-Square test, the relationship between diabetic neuropathy and each of gender and aspirin use was examined. As shown in table 2, although males were more likely to develop diabetic neuropathy, but the relationship between diabetic

neuropathy and gender was not statistically significant ($p=0.149$).

The results also showed that patients who used aspirin treatment were less likely to develop diabetic neuropathy compared with those who did not use aspirin treatment. The relationship between diabetic neuropathy and aspirin treatment was not statistically significant ($p=0.686$).

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

Variable	Diabetic neuropathy				P value
	Yes		No		
	N	%	N	%	
Gender:					0.149
- Males	11	33.3	22	66.7	
- Females	5	17.2	24	82.8	
Aspirin use:					0.681
- Yes	5	22.7	17	77.3	
- No	11	27.5	29	72.5	

Predictors of diabetic neuropathy among diabetic patients: As shown in table 3, using One Way Anova, we examined the predictors of diabetic

neuropathy from study variables. None of study variables were associated significantly with diabetic neuropathy ($p>0.05$ for all studied variables).

Table 3: Predictors of diabetic neuropathy among diabetic patients

		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	34.461	1	34.461	0.237	0.628
	Within Groups	8714.394	60	145.240		
	Total	8748.855	61			
Gender	Between Groups	.520	1	.520	2.091	0.153
	Within Groups	14.916	60	.249		
	Total	15.435	61			
Durationofdiabetes	Between Groups	47.033	1	47.033	1.378	0.245
	Within Groups	2048.213	60	34.137		

	Total	2095.246	61			
Aspirin use	Between Groups	.039	1	.039	0.164	0.687
	Within Groups	14.155	60	.236		
	Total	14.194	61			
Aspirin dose	Between Groups	88.778	1	88.778	0.140	0.712
	Within Groups	12695.313	20	634.766		
	Total	12784.091	21			

DISCUSSION:

The results of the present study showed that the prevalence of DN was 25.8%. This prevalence is less than that reported in other studies in which the prevalence of DN ranged between 50-60%^{3-4,13}. This may be due to other considerations among which is that diabetes duration is relatively low (about 7 years). It is known that with increasing duration of diabetes, the risk to develop DN increases⁵⁻⁸.

Although the relationship between DN and gender was not statistically significant, but the observed trend was that males were more likely to develop DN. This result is in line with other studies including the study of Aaberg et al¹⁵ who found that males developed DN earlier than females.

There was no significant relationship between DN and aspirin use ($p > 0.05$). We think that the reason for this could be due to the consideration that only 50% of diabetic patients were treated by aspirin which affected the results. However, several studies reported a positive effect for aspirin in reducing DN¹³⁻¹⁴. However, these studies studied the effects of combinations of aspirin with other drugs including levetiracetam or minocycline.

CONCLUSIONS: Although it was not statistically significant, males were more likely to develop diabetic neuropathy, whereas aspirin-using patients were less likely to develop diabetic neuropathy.

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