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Prevalence of Feet Problems and Protective Measures among Diabetic Pilgrims During AL-Arba'een of Imam Al-Hussain

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Abstract: Background: Pilgrims with diabetes are at high risk for foot problems due to decreased immunity, neuropathies, and peripheral vascular disease. This study was done to assess the prevalence of foot problems and protective measures adopted by diabetic pilgrims to prevent foot problems during AL-Arba'een of Imam Al-Hussain.

Methods: A descriptive study was conduct at a mobile clinic in Holy Kerbala during AL-Arba'een of Imam Al-Hussian from the period of 5th October 2019 to 10th July, 2024 in order to accomplish the early listed objectives. A purposive sampling consists of 186 pilgrims who were diagnosed previously as diabetic patients. The data were collected used a constructed questionnaire and therefore analyze used the statistical package for social science (SPSS) version 24 through the application of descriptive statistical analysis (frequencies, percentage, and mean of score).

Results: the most prevalent foot problems are foot blisters 52.6%, foot redness 55.9%, 73.1% and 89.7% have foot/legs pain and numb respectively. Most diabetes pilgrims complain from foot, toes, or leg swelling; 86.5%, and 91.9% of them their foot is sensitive to touch, and complains from feet hurt when walking; also 69.8% of pilgrims have muscle cramps in legs or foot. Most of diabetic pilgrims were washed their feet frequently, 44% of them are examined the water temperature before putting their feet in it, 39.7% of diabetic pilgrims are inspected the soles of their feet while walking, 38.1% of them are changed their socks at least one time a day, and 52.1% of diabetic pilgrims are inspected their shoes for a foreign body or torn linings before wearing.

Conclusions: Foot blisters, redness, foot/legs pain or numb; foot, toes, or legs swelling; foot sensitive to touch; foot hurt when walking; also, muscle cramps in legs or foot are the most common foot problems among diabetic pilgrims. The most important preventive measures that were done by diabetic pilgrims to prevent foot problems are washed their feet every day, examined water temperature before putting their foot in it, inspect the soles of their foot while walking, and inspect their shoes for foreign objects or torn linings before wearing.

Keywords: Foot Problem; Protective Measures; AL-Arba'een of Imam Al-Hussain.

Introduction: Al-A rba'een is a Shi'a Muslim religious ritual, which occurs 40 days after Ashura day. It is commemorating the martyrdom of Imam Hussain, the grandson of Muhammad (peace be upon him), which falls on the twentieth day of Safar. Al-Arba'een is the largest religious mass gatherings worldwide, in which more than 26 million people go to the city of Kerbala on foot (Wikpedia, Arbeen. 2016). Religious mass gatherings are increasingly common in Iraq and can harbor considerable public health risks. Hajj is the most thoroughly studied religious mass gathering. Many studies have been conducted on described public health consequences associated with Hajj. In Iraq, numerous religious mass gatherings occur during the year mostly in Kerbala. The public health impacts associated with mass gatherings are incompetently studying in Iraq (Chitheer, et al., 2020; Hantoosh, et al., 2019; and Al-Lami, et al., 2010).

Foot problems frequently result from prolonged walking and standing (Brehove, et al. 2000). Many of the pilgrims walked on foot from Baghdad, a journey of 100 Km, some walked from as far as Basra, a journey of nearly 700 Km. Hundreds of thousands of pilgrims came from Iran; a journey that takes around a month on foot (Ibtimes, Arbeen. 2016). In a similar situation, the Hajj rituals often include walking many miles, which can result in trauma to the foot, especially in those diabetic people (Vinary, and Goldman, 2004). Alfelali, et al., (2014) reported that the risk of foot wounds among Hajj pilgrims with diabetes is high due to the interplay of decreased immunity, neuropathies, and peripheral vascular disease. They emphasized that foot injuries were the most common cause for hospitals admission, fungal and bacterial infections were among the commonest dermatological problems among pilgrims.

Inadequate foot care knowledge and poor foot care practices are being recognized as major risk factors for foot problems in people with diabetes (Chandalia, et al., 2010, and George, et al., 2015). Preventive measures such as used a protective footwear, maintained regular diet and medications, and optimal blood sugar control may help to decrease the risk of foot problems in diabetic pilgrims (Alfelali, et al., 2014). In light of this, "prevention is better than cure." Determining the disease process, identifying disease risk factors, and establishing management that eventually lowers the risk should be the main goals of disease prevention (Athbi and Hassan, 2019). A good moisturizer applied two or three times a day will help to keep the skin moist and healthy (Alsafadi, et al., 2011), also daily checking of the foot for cuts or blisters and wearing comfortable shoes are suitable for avoiding feet problems. Diabetic patients should be examined before to the trip to confirm that they are physically capable of this ritual; also, they should be examined periodically to identify early problems such as foot harms (Vinary, and Goldman, 2004). Patients should be closely adherence to their health-related recommendations, that's can be assessed by looking at factors such as accuracy, consistency, and willingness to follow treatment recommendations for prescription medications, dietary modifications, and other lifestyle behaviors (Athbi, et al., 2024). No previous studies have been conducted to investigate foot problems and preventive measures for pilgrims with diabetes attending to Holly Kerbala in Iraq. This study aims to identify foot problems and preventive measures among diabetic pilgrims during AL-Arba'een of Imam Hussain.

METHODS

Design of the study: A descriptive quantitative study was conducted at a mobile clinic in Holy Kerbala during AL-Arba'een of Imam Hussian from the period of 5thOctober (2019) to 10th July (2024), in order to assess foot problems and preventive measures among diabetic pilgrims.

Sample of the study: A non-probability (purposive) sample of 186 pilgrims who were diagnosed previously as a diabetic patient, those were found in the mobile clinic at Holy Kerbala during AL-Arba'een of Imam Hussian.

The study instrument and data collection: The researchers constructed an assessment tool after reviews the related literature and relevant studies. The questionnaires consisting of closed-ended questions. It consists of three main parts as follow: A socio-demographic characteristics sheet, consist of twelfth items, which include age, sex, nationality, marital status, residency, education level, current employment status, body mass index, duration of diabetes, pre-existing chronic diseases, proximal walking distance, and participation number of attending to Kerbala during AL-Arba'een of Imam Hussain. The second part of the questionnaire was comprised of (16) items to investigate foot problems among diabetic pilgrims. The third part of the questionnaire consists of (17) items to assess the protective measures of diabetic pilgrims to protect their feet. The data are collected through the use of early constructed questionnaires and by interviewing techniques with subjects in the mobile clinics by the using of the Arabic, Persian, and English questionnaire version, and they were interviewed in a similar way, in the same place, during AL-Arba'een of Imam Al-Hussain. Content validity for the early-developed instrument was determined by used a panel

of experts to examine the relevancy, clarity, and adequacy of the questionnaire to measure the concept of interest. A pilot study was conducted on (10) diabetic pilgrims, which was selects from mobile clinics at Holy Kerbala in order to identify the reliability of the questionnaire.

Statistical data analysis: The data were investigated by using the IBM program of Statistical Package of Social Sciences (SPSS) Version 24 through the application of descriptive statistical analysis (frequencies, percentage, and mean of score).

RESULTS

Table (1): Distribution of diabetic pilgrims by their socio-demographic characteristics:

Socio-demographic characteristics		Frequency (f)	Percentage (%)
Age Groups	<20 -29	3	1.6
	30 -39	25	13.4
	40 - 49	48	25.8
	50 - 59	69	37.1
	≥ 60	41	22.0
Sex	Male	88	47.3
	Female	98	52.7
Marital Status	Divorced/Separated	8	4.3
	Widowed	29	15.6
	Single	5	2.7
	Married	144	77.4
Nationality	Bahrain	1	0.5
	Saudi	1	0.5
	Lebanon	1	0.5
	Indian	1	0.5
	Iran	50	26.9
	Iraq	132	71.0
Residency	Rural	43	23.1
	Urban	143	76.9
Education level	No formal education	76	40.9
	Primary school	44	23.7
	Secondary school	37	19.9
	University graduated	29	15.6
Employment status	Farmer	9	4.8
	Gainer	31	16.7
	Housewife	87	46.8
	Student	2	1.1
	Retired	7	3.8
	Employee	50	26.9

Table (2): Distribution of diabetic pilgrims by their medical information:

Items	Categories	Frequency (f)	Percentage (%)	Cumulative Percentage %
Diabetic duration	< 1 year	6	3.2	3. 2
	1 – 5 years	90	48.4	51.6
	> 5	90	48.4	100.0
Body mass index	< 18.5	3	1.6	1.6
	18.5 - 24.9	40	21.5	23.1
	25 – 29.9	67	36.0	59.1
	≥ 30	76	40.9	100.0
Pre-existing chronic disease	Asthma	3	1 .6	1.6
	Stomach ulcer	1	0.5	2.1
	Arthritis	15	8.1	10.2
	Heart failure	7	3.8	14.0
	Hypertension	84	45.2	59.1
	Renal	2	1.1	60.2
	Non	74	39. 8	100.0

Table (3): Proximal walking distance and number of attending to Kerbala of diabetic pilgrims during AL-Arba'een of Imam Al-Hussain:

	Groups	Frequency (f)	Percentage (%)	Cumulative Percentage %
Proximal walking distance	< 50 Km	47	25.3	25.3
	50 – 149 Km	101	54.3	79.6
	150 – 249 Km	7	3.8	83.3
	250 – 349 Km	13	7.0	90.3
	≥ 350	18	9.7	100.0
Participation number of attending to Kerbala	< 5	83	44.6	44.6
	5-10	63	33.9	78.5
	≥ 10	40	21.5	100.0

Table (4): Statistical result of foot problems among diabetes pilgrims:

Type of foot problems	Number of pilgrims suffering				MS	Severity
	Yes		No			
	f	%	f	%		
Foot blister	98	52.6	88	47.3	1.5	H
Foot injury	48	25.8	137	73.6	1.2	L
Foot redness (erythema)	104	55.9	82	44.0	1.5	H
Foot, toes, or legs swelling	132	70.9	54	29.0	1.7	H
Feeling hot in one foot in comparison to other foot	80	43.0	106	56.9	1.4	L
Sore foot	32	17.2	154	82.7	1.1	L
Diabetic foot ulcer	58	31.1	128	68.1	1.1	L
Foot dryness and callosity	30	16.1	156	83.8	1.3	L
Foot mycosis	48	25.8	138	74.1	1.2	L
Foot tendonitis	96	51.6	90	48.3	1.5	H
Muscle cramps in legs or foot	130	69.8	56	30.1	1.6	H
Foot or legs numb	136	73.1	50	26.8	1.7	H
Foot or legs pain	167	89.7	19	10.2	1.8	H
Prickling (tingling) feelings in legs or foot	148	79.5	38	20.4	1.7	H
Foot sensitive to touch	161	86.5	25	13.4	1.8	H
Foot hurt when walking	171	91.9	15	8.0	1.9	H

MS = Mean of score; H=High level of severity (MS≥1.5); L=Low level of severity (MS<1.5).

Table (5): Statistical result of protective measures among pilgrims with diabetes mellitus to protect their foot:

Protective measures	Responses						MS	Severity
Protective measures	Always		Sometimes		Never			
	f	%	f	%	f	%		
Measure of glucose level	92	49.4	80	43.0	14	7.5	2.4	H
Maintaining regular diabetes diet meal	96	51.6	55	29.5	35	18.8	2.3	H
Drinking plenty of water	138	74.1	41	22.0	7	3.7	2.7	H
Use of diabetes mellitus medication as prescribed	114	61.2	28	15.0	44	23.6	2.3	H
Inspect the soles of your foot while walking.	74	39.7	79	42.4	33	17.7	2.2	H
Do you wash your foot every day	109	58.6	60	32.2	17	9.1	2.4	H
Examine water temperature before putting your foot in	82	44.0	71	38.1	33	17.7	2.2	H
Do you dry well between the toes	45	24.1	49	26.3	92	49.4	1.7	M
Using foot or baby powder	6	3.2	25	13.4	155	83.3	1.1	L
Using of vaseline or another moisturizer	19	10.2	46	24.7	121	65.0	1.4	L
Using antiperspirant for foot	5	2.6	20	10.7	161	86.5	1.1	L
Wear cotton socks	70	37.6	41	22.0	75	40.3	1.9	M
Change socks at least one time a day	71	38.1	69	37.0	46	24.7	2.1	H
Walk barefoot	11	5.9	40	21.5	135	72.5	1.3	L

Using medical shoes	**64**	**34.4**	**40**	**21.5**	**82**	**44.0**	**1.9**	M
Do you ever wear shoes without wearing any socks	**10**	**5.3**	**39**	**20.9**	**137**	**73.6**	**1.3**	L
Inspect your shoes for foreign objects or torn linings before wearing	**97**	**52.1**	**47**	**25.2**	**42**	**22.5**	**2.2**	H

M.S. = Mean of score; H=High level of severity (M.S.≥2); M=Moderate level of severity (M.S.≥1.5-<2); L=Low level of severity (M.S.<1.5).

DISCUSSION

This is the earliest study aims to assess the prevalence and protective measures of foot problems among diabetic pilgrims. The result of the present study exposed that AL-Arba'een pilgrims complains from many foot problems; the most common foot problems among diabetic pilgrims are blisters and erythema, many pilgrims failed to perform the basic preventive measures such as foot protection. Regarding the socio-demographical features of the study sample as shown in table (1) the findings indicate that 37.1% and 25.8% of pilgrims with diabetes were in the 50-59 and 40-49 age groups, respectively. Among all pilgrims more most (52.7%) of them were females, and the majority (77.4%) of them were married. Alakkas, (2015) reported that out of 262 hajj pilgrims with diabetes 237 (90.5%) were male and 25 (9.5%) were female, 45.8% and 43.5% of them were within the age group of 35-54, and 55-74-year-old.

Concerning to educational level, the results indicates that about 40.9% of diabetic pilgrims do not have formal education, and 23.7% have primary school education, this result disagrees with the results of the study that was conducted by Chiwanga, (2015) exposed that about 11.3% of respondents does not have any formal education, and 62.6% of them had primary education. In relation to the employment status, the results reveal that 46.8% of the subjects were housewives, and 26.9% were employees.

Regarding the pilgrim's nationality, the result indicates that participants belonged to six different nationalities, the majority (71%) of them were from Iraq, and the most common being 26.9% from Iranian nationality. Alfelali, et al., (2014) stated that is out of 197 respondents involved in a study to evaluate foot injuries in pilgrims performing the Hajj with and without diabetes mellitus: consequences for infection control, revealed about 26% of pilgrims were from Pakistan, and 20% were from Egypt. Concerning to body mass index of the pilgrims as shown in table (2) the result indicates that most of the diabetic pilgrims (40.9%), and (36.0%) were obese and overweight respectively. This result comes along with the results of the study done by Sridhar, et al., (2014) to investigate the foot ailments during Hajj, reported that one third (29.5%) of the study sample were obese and slightly more than one third (37.2%) were overweight.

Regarding the proximal walking distance and the participation number in AL-Arba'een of Imam Hussain. The result indicates that the majority (74.7%) of them are walked approximately more than 50 Km in order to reach the Imam Hussain Shrine, and 55.4% have had more than five number of participations in AL-Arba'een of Imam Hussian. Sridhar, et al., (2014) reported that approximately 58 kilometers was the expected total walking distance for the entire Hajj journey.

Concerning to preexisting chronic disease, the result indicates that most (45.2%) of the pilgrims have had a history of hypertension and 15.1% have other medical conditions in addition to diabetes mellitus. This result corresponding with the results of the study of Alfelali, et al., (2014) indicated that thirteen individuals (22%) out of the sixty (60) with diabetes had additional medical issues, while 47 (78%) had diabetes alone.

After analysis of foot problems among diabetic pilgrims as shown in table (4), the results indicate the blisters and purulent ulcers were the most common foot problems observed among AL-Arba'een pilgrims walking to Holy Kerbala for long-distance. Blisters were also the most common foot problems requiring medical care among pilgrims. It is accounted about 52.6% of pilgrims have blisters, and 55.9% have had foot redness (erythema). These findings are corresponding with the findings of the study that was done by Alfelali, et. al., (2014) shows that blisters and erythema are the most frequently detected foot injuries and accounted 34%, and 25% respectively. Another study by Sridhar, et al., (2014) reported that the prevalence of foot blisters is high among the Hajj pilgrims and accounted for about 29.4% among diabetic pilgrims.

In addition to that, the findings demonstrate that 70.9% of diabetes pilgrims have complained of foot, toes, or legs swelling, and 69.8% complains from muscle cramps in legs or foot. This finding was in disagreement with the study of Sridhar, et al., (2014) revealed that out of 129 subjects involved in the study only two pilgrims reported legs edema during Hajj.

On the other hand, the majority (73.1%), (89,7%), (86.5%), and (91.9%) of diabetic pilgrims complain of foot or leg numbness, foot or legs pain, foot sensitivity to touch and foot hurt when walking respectively. This can be attributed to the long-distance walking while performing rituals during AL-Arba'een of Imam Hussain. The study of Mehra, et al., (2008)

demonstrated that most (40.6%) common symptom among diabetic patients was foot numbness and was more common in long-duration diabetes. Another study conducted by Vinay, (2004) reported that the Hajj rituals often involve walking many miles, which can result in accidental foot trauma, especially in those diabetic people.

About the preventive measures that were done by diabetic pilgrims as shown in table (5), the result indicates that diabetic pilgrims perform many measures to prevent foot problems, about 61.2% of diabetes pilgrims are the use of diabetic medication as prescribed in order to control their blood glucose level, 58.6% of diabetes pilgrims wash their foot every day to prevent foot problems, 44% of them are tested the water temperature before putting their foot in it, 39.7% of diabetic pilgrims are inspecting the soles of their foot while walking, 38.1% of them are changing their socks at least one time a day, and 52.1% of diabetic pilgrims are inspected their shoes for a foreign body or torn linings before wearing. Alfelali, et al., (2014) reports that the use of suitably protective footwear and regular control in medications are extremely suggested for pilgrims' ideal foot care.

CONCLUSIONS

The study demonstrated that the most common foot problems among diabetic pilgrims during AL-Arba'een of Imam Hussain were foot blisters; foot redness (erythema); foot/legs pain or numb; foot, toes, or legs swelling; foot sensitive to touch; foot hurt when walking; also muscle cramps in legs or foot. All of these foot problems were because of walking for long distances, and sometimes barefoot. The most important preventive measures that were done by diabetic pilgrims to prevent foot problems are washed their feet every day, test water temperature before putting their foot in it, inspect the soles of their foot while walking, change their socks at least one time a day, and inspect their shoes for foreign objects or torn linings before wearing.

Recommendations

1. Foot problems can be prevented through the application of protective measures by diabetic pilgrims to protect their feet.

2. Establishing well-equipped specialized mobile clinics, educational strategies for diabetic pilgrims during AL-Arba'een of Imam Hussain.

3. Educational advice on preventive measures that's should be applied to diabetic pilgrims to protect their feet during travel could be beneficial for diabetic pilgrims during AL-Arba'een of Imam Hussain.

4. Another study should be conducted to investigate factors that are contributing to the occurrence of foot problems among diabetic pilgrims.

5. To improve diabetes patients' understanding of self-care techniques and routine diabetic foot evaluation, frequent diabetic care should be provided.

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Ethical Considerations

The ethical endorsement was achieved from the Kerbala health directorate, as well as informed consent was attained from all participants to signify their enrolment in this study. Furthermore, authorization was achieved from the Scientific Research Ethical Committee at the Nursing College/University of Kerbala.

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