

## Foot Self Care in Diabetic Patients

Nayereh Salmani<sup>1\*</sup>, Seyyed Vahide Hosseini<sup>2</sup>

1. Islamic Azad University, Yazd, Iran
2. Islamic Azad University, Zanzan, Iran

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### ABSTRACT

**OBJECTIVE:** Foot ulcer in diabetic people has a negative effect on their quality of life. It can decrease social activities, and increase stress. It can also limit doing job tasks, and increase life financial burden and high medical expenses. So examination of feet and considering foot care in these patients are essential.

**MATERIALS AND METHODS:** This analytic-descriptive research was performed on 80 hospitalized diabetic patients in 2009 using questionnaires to assess their demographic data and self foot care. The subjects were selected in a convenience method.

**RESULTS:** Only 7.5% of subjects had been educated about self care to prevention of foot ulcer. Practice level in self care behaviors of 15% of them was good, 60% moderate and 25% low. There was a significant relationship between sex and the amount of foot care and between the histories of foot ulcer existence and the amount of foot care according to chi-square test.

**CONCLUSION:** Preventive measures can decrease the incidence of foot ulcer in diabetic people so it seems that providing educational programs about the ulcer and prevention methods is necessary to improve these patients' quality of life.

**KEYWORDS:** Self Care, Diabetic Foot Ulcer

### INTRODUCTION

Prevalence of diabetes mellitus in Iran is 5 to 8 per cent (1). There are about 4 million diabetics in Iran and five thousand people add to these diabetic patients annually (2). Diabetes is one of the main harmful diseases for several systems of the body and there are many related complications which diabetic foot is one of them. Diabetic foot is one of the most important reasons of disability. About 15% of diabetic patients develop diabetic foot in their life which may lead to ulcer and gangrene and also in some cases result to foot amputation. The reason of non-traumatic amputation is diabetic foot disorders in almost 50% of cases (3). Death rate is more prevalent

in diabetics with ulcer (2 to 4 times more) than diabetics without ulcer (4). There are 82000 cases of amputation due to diabetic foot ulcer in the United States annually. The main reasons of amputation are the neurovascular susceptibility of diabetics and also slow process of ulcer recovery (3). It means that diabetic foot is a multi-factorial disease and factors such as structural deformity, ulcer and infection can cause it (5).

When healthy people walk, their weight is distributed to their planta pedis appropriately but sensory and motor neuropathies in diabetic patients make disorder in pressure distribution which may lead more pressure on the tips of

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\*Correspondence: Nayereh Salamni, Islamic Azad University, Yazd, Iran.

**Tel:** (+98) 0351 824 5935. **E-mail:** mahadiat@yahoo.com

the toes and make it susceptible for developing ulcer (6). Loss of pain sensation and pressure due to sensory neuropathy lead to foot dryness and crack. On the other hand peripheral vascular involvement and poor circulation make the ulcer susceptible to gangrene, and because of negative effect of hyperglycemia on white blood cells ability, ulcer resistance against infection decreases. These factors altogether prevent ulcer improvement (7). According to studies, ulcer formation in diabetic people affects their quality of life because the ulcer leads to reduction of person's activity which causes negative effect on his quality of life. Furthermore, it can decrease social activities and increase stress in patient and his family. It can also make a limitation of doing job tasks, and an increase in life financial burden and high medical expenses (4). So examination of feet and considering foot care in these patients is essential (7). According to studies self care and preventive programs can decrease amputation cases from 50% to 75% in these patients (8). King et al. (2008) introduced neuropathy and its following ulcers as a risk factor in developing social and economic crises in diabetic patients. They also declared that diabetic patients can increase their chance of amputation prevention by self care and continuing follow-up for getting on time treatment especially when ulcer formation starts to prevent more injuries by implementation of necessary measurements (9). The aim of the present study was to examine diabetic patients' practice of self care in preventing diabetic foot ulcer to develop and provide needed educational programs about foot self care and diabetic foot ulcer prevention.

#### MATERIALS AND METHODS

This analytic-descriptive research was performed on 80 hospitalized diabetic patients

of Shohadaye Kargar Hospital (Yazd province) in 2009. The subjects were selected in a convenience method. Research tool was a researcher-made questionnaire in two parts. The first part was used to assess demographic data such as age, sex, job, education level, diabetes type, diabetes history, number of hospitalizations due to diabetes, history of foot ulcer, and history of learning about foot care in order to prevent diabetic foot. The second part was a 13-question self foot care questionnaire, each question included 3 the following items: I always do, sometimes do, and seldom do with 0, 1, and 2 scores, so the highest score was 26 and the lowest was 0. Scores 0-8 were considered as a poor foot care, scores 9-17 as moderate level and 18-26 as a good level of foot care. After completing questionnaires, data were analyzed by SPSS 10 and statistical tests.

#### RESULTS

The results of this study showed that the range of patients age was 37-89 with the average of 63.3 (SD = ±1.93). Male to female ratio in subjects were the same. Subject characteristics (n = 80) are presented in Table 1. Most of the subjects (n=48, 60%) had type 2 diabetes, and 32 (40%) had type 1 diabetes. The length of having diabetes varied from less than 10 (65%) to more than 10 years (25%).

27.5% of subjects had a history of diabetic foot ulcer, among whom 12.5% had experienced less than 3 times and 15% more than 3 times ulcer formation in their feet. Most (70%) had no ulcer at research time while 24 (30%) had diabetic foot ulcer.

Only 7.5% of subjects had been educated about self care to prevention of foot ulcer and other 92.5% had received no education. Practice level in self care behaviors was good in 15% of the subjects, moderate in 60% and low in 25%.

**Table 1- Subjects characteristics**

Literacy		Men's jobs			Marital status	
literate	illiterate	retired	Self-employed	worker	married	widowed
27.5%	72.5%	35%	35%	30%	95%	5%

Among the caring practices the following had the most frequency: 1- avoiding tobacco (85%), 2- wearing appropriate shoes and not using hot bottles for keeping feet warm (47.5%) 3- avoiding walking barefoot (42.5%) 4- using warm water for bathing feet (37.5%) 5- avoiding over counter medicines for corns (35%) 6- cutting toenails straight across (32.5%) 7- daily bathing and drying of feet (25%) 8- daily feet inspection (22.5%) 9- checking inside the shoes before wearing (20%) 10- daily checking of socks (15%) 11- regular examining of feet by a podiatrist (12.5%) 12- buying shoes in the afternoon (5%) (Table 2).

Chi-square test revealed a significant relationship between sex and the amount of foot care; women had a better care rather than men. Also there was a significant relationship between the histories of foot ulcer with the amount of foot care according to chi-square test. Patients with higher education participated in foot self care programs more than patients with lower levels of education, they also had higher scores ( $P < 0.05$ ).

## DISCUSSION

The aim of this study was to determine the amount of foot self care in diabetic patients. The results of this study revealed that the majority of these patients had not been educated. In a study Afkhami et al. also showed that only 16.4% of subjects were taught (5). Also in Bagheri et al. study about quality of diabetics life 78.8% of subjects had no special educational program about diabetes and caring (10). In fact these findings support each other and show that not doing self care is one of the most important factors which may cause ulcer formation in diabetic foot, besides, lack of sufficient knowledge about the importance of self care programs and lack of access to necessary education about this, can make patients more susceptible to these complications which may affect different aspects of their life including physical, mental, social and economic. So providing and presenting standardized educational programs about self care seems to be necessary (5).

Lack of proper caring practice in diabetic patients was another finding of this study. The results of a study conducted on patients in

**Table 2- Frequency distribution**

Questions	always		sometimes		seldom	
	Accumulated frequency	Frequency	Accumulated frequency	Frequency	Accumulated frequency	Frequency
1- I inspect feet carefully and daily for calluses, corns, blisters, cracks, and abrasions.	22.5%	18	25%	20	52.5%	42
2- I wear proper shoes to protect feet.	47.5%	19	32.5%	13	20%	16
3- I avoid walking barefoot to prevent injuring foot.	42.5%	34	27.5%	22	30%	24
4- I check my shoes for sharp things or stones before wearing them.	22.5%	18	37.5%	30	40%	32
5- I buy shoes in the afternoon – feet are larger in the afternoon than in the morning.	5%	4	20%	16	75%	60
6- I change my socks daily and check them for hole.	15%	12	32.5%	26	52.5%	42
7- I bath feet and between toes daily in water and soap and then dry them carefully.	25%	20	52.5%	42	22.5%	18
8- I cut toe nails straight across to prevent ingrown toenails.	32.5%	26	27.5%	22	40%	32
9- I use warm water (never hot) for bathing feet.	37.5%	30	47.5%	38	15%	12
10- I avoid exposing feet to hot water bottles or other heaters in order to keep feet warm.	47.5%	38	17.5%	14	35%	28
11- I avoid over counter medicines for corns.	35%	28	17.5%	14	47.5%	38
12- I go to a podiatrist on a regular basis.	12.5%	10	15%	12	72.5%	58
13- I avoid tobacco to prevent reduction in blood flow to feet.	85%	68	2.5%	2	12.5%	10

Yazd Diabetes Research Center showed that considerable percentage of diabetic patients had no proper self care practice (5). Also in a study, Aghamohammadi et al. indicated that 73.33% of subjects had moderate level of knowledge about foot self care (11). In this study a significant relationship was found between foot self care and education level, sex, and ulcer history. It means that diabetic patients with higher level of education participated in foot self care programs more than patients with lower levels of education. On the other hand women's practice level was better than men. Self care was more important for those with a history of diabetic feet ulcer and their practice level was higher. Afkhami et al. support these findings. Their study showed women wash and dry their feet and massage them with a lubricating lotion daily and also wear proper shoes more than men. Also in their study self care of patients with lower level of education was lower than educated people (5). But the findings of Sharon et al.

(2000) about the effect of sex on diabetic type 2 indicated that diabetes control in men was more than women and men diet management was better than women in their self care program (12). Majority of the subjects had not performed most necessary self care practices of diabetic foot prevention as a regular basis. Kaur et al. also revealed that diabetic patients only wash their feet daily and do not perform other necessary caring actions, so they need to learn about self care (13).

#### CONCLUSION

Our findings showed that in spite of foot ulcer prevalence in diabetic patients, majority of cases had not received any education about self care methods of foot ulcer prevention. So the findings confirm and support the necessity of developing and providing standardized educational programs for diabetic patients about formation of foot ulcer and its prevention.

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