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# Foot-Care Activities among Type II Diabetic Patients at Merjan Teaching Hospital, Al-Hilla City

Ali Hussein Alwan[1]; Ameer Alhusuny[2]
[1]*Associate Professor Ali Hussein Alwan Internal Medicine, Diabetology and Endocrinology M.B.Ch.B, F.I.C.M Department of Medicine College of Medicine/ University of Babylon*
[2]*Lecturer AmeerAlhusuny Occupational Health and Epidemiology M.B.Ch.B, MSc Department of Community Medicine College of Medicine/ University of Babylon*

***Abstract:***
***Background:*** *Foot care is one of the most important ways for patients with diabetes type II toavoid complications by proper and functioning foot care.* ***Aim of Study:*** *to assess foot care knowledge among Type II DM patients as well as to find the mean difference of foot care assessment score by patients' socio-demographic characteristics and medical history in a cross-sectional study at Merjan Teaching Hospital in Al-Hilla City.* ***Materials and Methods:*** *Ahospital-based cross sectional study design was carried out on (200) patients with Type II DM seen between January 2014 and June 2014in Merjan Teaching Hospital.Categorical variables were presented as frequencies and percentages. Continuous variables were presented as mean with their 95% confidence interval (CI) and standard deviation. Independent sample t-test was used to compare means between two groups. One Way Analysis of Variance (ANOVA) was used to compare among more than two groups. A p-value of ≤ 0.05 was considered as statistically significant.****Results:*** *The results showed that, Out of 200 patients with Type II DM, the overall mean score of foot care assessment was (51.16± 8.32). Mean age of DM patients was (51.82± 11.57) years old. There was no significant mean difference between the age of male (53.07± 12.9) years old and mean age of female (51.33± 11.24) t=0.961, df= 198, p= 0.338. (64.0%) of patients belonged to urban area, meanwhile, (80.0%) of patients were married. (40.0%) of patients completed their primary schools study. (56.0%) were not employed and (46.0%) of patients had enough family income. (85.5%) of patients had family members offered care for them. (52.0%) of patients were severed from the diseases for less than five years, meanwhile, (68.5%) of DM patients did not admitted to emergency room because of elevated blood sugar. (40.0%) of DM patients had pain in their feet and (82.0%) were not smokers.Higher rate was for DM patients who wash their feet. On other hand, higher rate was for DM patients wear sandal.There were significant mean difference of foot care assessment score by marital status, educational level, duration of disease, previous admission to emergency room and foot problem.* ***Conclusion:*** *There was an overall good foot care among DM type II patients in Merjan Teaching Hospital. There was no difference between men and women concerning all foot care activities, meanwhile, single were better than married DM patients about their foot care.*

***Key words:*** *Type II Diabetes Mellitus(DM), Foot care, Foot problem*

## I. Introduction

Diabetes Mellitus (DM) Type II is account for approximately 90% of all diabetes patients. It is a systemic chronic and severe disease characterized by elevated plasma glucose [1]. Type II DM is a disease of ineffective use of produced insulin and/ or inadequate pancreas insulin production [2]. It is a disease of difficult diagnosis, however, some patients may not have any symptoms or their symptoms develop very slowly [3]. There is dramatic increase in prevalence of DM Type II worldwide from 171 million in 2000 until a predicted of 366 million in 2030. However, this increment has been attributed to growing population of people over 65 years old, physical inactivity, urbanization as well as prevalent obesity [4]. Although, the disease is most common in Europe and the USA, but there is large increases have been expected in the developing countries, especially in South-East Asia [1]. The prevalence of long term complications of Type II DM may increase if there is deficient health care system such as in developing countries [5].

DM affects the circulation and immune system, which in turn impairs the body's ability to heal itself. Over time, DM patients are less likely to feel feet injury, such as a blister or cut as a result of DM damage to their sensory nerves and leads to neuropathy. So far, unnoticed and untreated, foot injuries can quickly become infected and leading to serious complications such as amputations of toes, foot or legs [6], which can lead to loss of quality of life, and economical burden in terms of disability and health care loss [7 and 8].

Getting optimal foot care and also intensive glycemic control may help to reduce the diabetic foot complications, improves survival and it is also cost-effective [9]. DM patients need intensive foot care involves

daily foot inspection for any blisters, redness, cuts, nail problems or swelling as well as daily foot wash in warm water and dry the feet carefully especially between the toes [10 and 11].

Despite the research and treatment for people with DM, still there are damages mainly in the nervous system and blood vessels. In Iraq, despite there are high prevalence of foot problems among Type II DM patients. However, the information about DM patient's foot cares knowledge still lacking. This study has been carried out to assess foot care knowledge among Type II DM patients as well as to find the mean difference of foot care assessment score by patients' socio-demographic characteristics and medical history.

## II. Materials And Methods

This hospital-based cross-sectional study was carried out in a tertiary centre (Diabetic and Endocrine Centre in Merjan Teaching Hospital, Babylon province). Two hundreds patients with Type II DM seen between January 2014 and June2014 were included in this study. Self-induced likert scale questionnaire for foot care assessment based on NICE Guideline for Type II DM prevention and management of foot problem has been used[9]. This questionnaire was asking patients about washing their feet, howto check their feet, drying between toes, using moisturizers,cutting their toenails properly, wearing slippers andinspecting the insides of their shoes. In addition to socio-demographic data which has been collected from DM patients. The other four questions were asking about DM patients' medical history such as duration of disease, previous admission to emergency room in last year, foot problems as well as smoking habit.

Statistical analysis was carried out using SPSS version 18. Categorical variables were presented as frequencies and percentages. Continuous variables were presented as means with their 95% confidence interval (CI). Independent sample t-test was used to compare means between two groups.One Way Analysis of Variance (ANOVA) was used to compare among more than two groups.A *p*-value of $\leq 0.05$ was considered as statistically significant.

## III. Results

Out of 200 patients withType II DM, the overall mean score of foot care assessment was (51.16± 8.32). Meanage of DM patients was (51.82±11.57) years old. There was no significant mean difference between the age of male (53.07± 12.9) years old and mean age of female (51.33± 11.24) t=0.961, df= 198, p= 0.338. (64.0%) of patients belonged to urban area, meanwhile, (80.0%) of patients were married. (40.0%) of patients completed their primary schools study (Figure 1). (56.0%) were not employed and (46.0%) of patients had enough family income. (85.5%) of patients had family members offered care for them. (52.0%) of patients were severed from the diseases for less than five years (Figure 2), meanwhile, (68.5%) of DM patients did not admitted to emergency room because of elevated blood sugar. (40.0%) of DM patients had pain in their feet (Figure 3) and (82.0%) were not smokers.

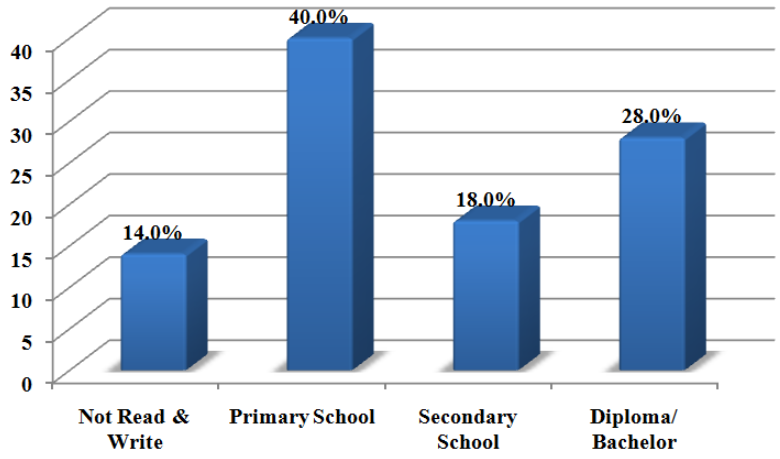


**Figure 1: Distribution of DM patients by educational levels**

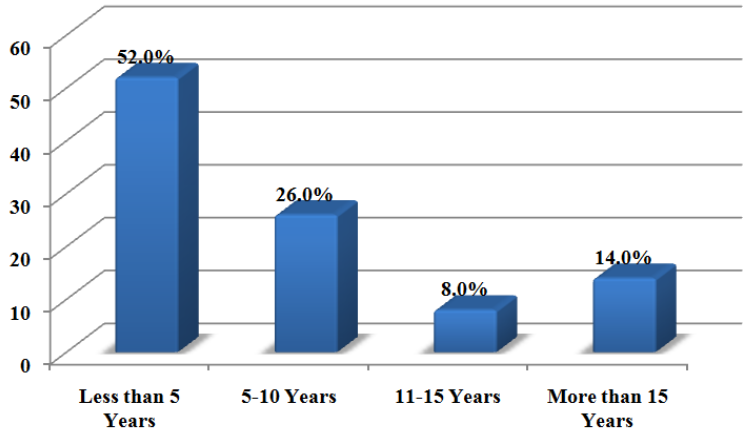


**Figure 2: Distribution of DM patients by duration of disease**

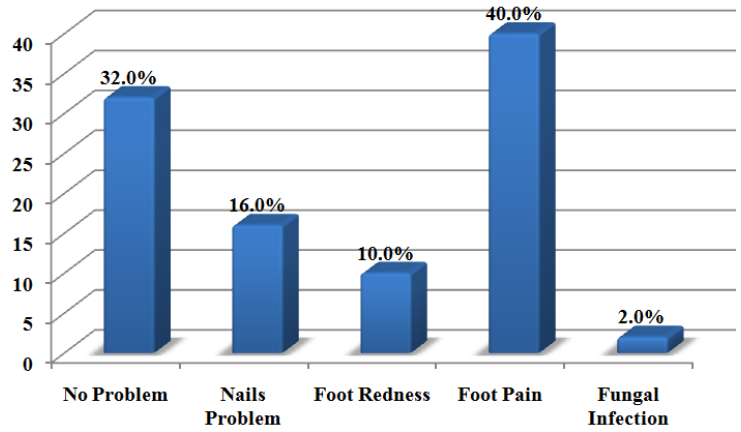


**Figure 3: Distribution of DM patients by foot problems**

Table 1 shows the distribution of DM patients by foot care assessment. Higher rate was for DM patients who wash their feet. On other hand, higher rate was for DM patients wear sandal.

**Table 1: Distribution of DM patients by foot care assessment**

| Variable | Mean ± SD |
|---|---|
| **Inspect Feet** | 2.98± 1.69 |
| **Examine between toes** | 2.84± 1.67 |
| **Wash feet** | 4.72± 0.98 |
| **Check of water temperature beforebath** | 4.46± 1.06 |
| **Dry feet well after washing** | 3.34± 1.68 |
| **Ensure wiping between toes** | 3.12± 1.72 |
| **Use emollients for dry skin** | 2.70± 1.55 |
| **Cut toenails properly** | 4.00± 0.96 |
| **Cut sharp edges of nails** | 3.92± 1.06 |
| **Cut nails very short** | 2.48± 1.39 |
| **Walk bare foot** | 1.64± 1.15 |
| **Wear shoes without socks** | 1.52± 1.14 |
| **Wear narrow socks** | 1.60± 1.15 |
| **Wear socking while sleeping** | 1.60± 1.15 |
| **Elevate feet while sitting** | 2.46± 1.57 |
| **Wear sandal** | 4.24± 1.41 |
| **Inspect shoes before putting themon** | 3.30± 1.70 |

Table 2 shows that, there were significant mean difference of foot care assessment score by marital status, educational level, duration of disease, previous admission to emergency room and foot problem.

| Variable | N | Mean± SD | Test value | P value |
|---|---|---|---|---|
| **Sex** | | | | |
| Male | 56 | 51.07± 8.20 | 0.094[a] | 0.925 |
| Female | 144 | 51.19± 8.39 | | |
| **Residence** | | | | |
| Urban area | 128 | 51.44± 8.83 | 0.628[a] | 0.531 |
| Rural area | 72 | 50.67± 7.37 | | |
| **Marital status** | | | | |
| Single | 4 | 58.00± 0.00 | | |
| Married | 160 | 50.20± 8.43 | **5.889[b]** | **0.003*** |
| Widow | 36 | 54.67± 6.96 | | |
| **Educational levels** | | | | |
| Not read and write | 28 | 48.14± 7.84 | | |
| Primary school | 80 | 51.20± 8.15 | **2.844[b]** | **0.045*** |
| Secondary school | 36 | 53.78± 7.00 | | |
| Diploma/ bachelor | 56 | 50.93± 9.19 | | |
| **Occupational status** | | | | |
| Governmental employer | 60 | 52.07± 9.89 | | |
| Self-employed | 28 | 53.28± 4.77 | 2.130[b] | 0.122 |
| Non-employed/ housewife | 112 | 50.14± 8.00 | | |
| **Family income** | | | | |
| More enough | 16 | 55.00± 12.50 | | |
| Enough | 92 | 51.65± 8.00 | **2.809[b]** | **0.043*** |
| Not enough | 92 | 50.00± 7.59 | | |
| **Having family member care about you** | | | | |
| Yes | 171 | 51.44± 8.15 | 1.175[a] | 0.241 |
| No | 29 | 49.48± 9.26 | | |
| **Duration of disease** | | | | |
| Less than 5 years | 104 | 49.61± 8.51 | | |
| 5-10 years | 52 | 52.15± 8.76 | **2.865[b]** | **0.038*** |
| 11-15 years | 16 | 54.25± 6.59 | | |
| More than 15 years | 28 | 53.28± 6.59 | | |
| **Previous admission to emergency room** | | | | |
| None | 137 | 49.69± 7.83 | | |
| Only one | 27 | 50.11± 8.37 | **14.799[b]** | **<0.001*** |
| More than one | 36 | 57.55± 7.30 | | |
| **Foot problem** | | | | |
| None | 64 | 50.62± 10.23 | | |
| Nails problem | 32 | 48.12± 7.47 | | |
| Foot redness | 20 | 59.20± 3.14 | **9.272[b]** | **<0.001*** |
| Foot pain | 80 | 51.40± 6.22 | | |
| Fungal infection | 4 | 39.00± 0.00 | | |
| **Smoking habit** | | | | |
| Smokers | 36 | 49.89± 8.15 | | |
| Non-smokers | 164 | 51.44± 8.36 | | |

**Table 2: Mean differences of foot care assessment score by study variable**

[a:] Independent sample t-test

[b:] One Way Analysis of Variance (ANOVA)

[*]p value≤ 0.05 is significant

## IV. Discussion

Foot complications are most common among Type II DM patients which can causeperipheral nervous and vascular diseases.It makes the patient unable to feel any blisters or stones in the shoes as well as it difficult for wounds or ulcers to heal. However, these complications of non-healing wound can lead to amputations of toes, foot or legs, therefore, loss of patients' quality of life, physical activity and economic burden in terms of disability and health care.The study findings show that face to faceeducation is preventive and vitally important for diabeticpatients. Majority (76.0%) DM patients had good foot care. Single with higher education DM patients had higher significant score of foot care, as well as, thus with more enough family income. Meanwhile, DM patients who had the disease for less than five years as well as they did not have previously admission to the emergency room, had the lowest score of foot care. This is why it is important that these patients get optimal foot care to reduce the diabetic foot complications, improves survival andit is also cost-effective. A higher level of foot care a more ulcer prevention will also obtain great health benefits[6]. The patients need to inspect their feet daily, to seeif there are any blisters, redness, cuts, nail problems or swelling. It is also important to wash the feetdaily in lukewarm water with a sponge or washcloth and dry the feet carefully, especially betweenthe toes[8].Daily foot wash should besupplemented with a foot bath about once a week. After washing, it is important to moisturize thefeet, but not between the toes, which can cause fungal infection[9]. In this study, the

higher rate was for DM patients who wash their feet. On other hand, higher rate was for DM patients wear sandal. However, these results do not agree withThe American College of Foot and Ankle Surgeon´s (2009) who consider that patients need toinspect their shoes and feet daily, to see if the shoes are broken, or if there are any blisters, redness,cuts, nail problems or swelling, since the disease can cause neuropathy, which make the patientunable to feel any blisters or stones in the shoes[7]. Therefore the health-care givers inMerjan teaching Hospital should improve their foot care recommendations even more since the result concerningfoot self-care activities was not optimal.

## V. Conclusion:

There was an overall good foot care among DM type II patients in Merjan Teaching Hospital. There was no difference between menand women concerning all foot care activities, meanwhile, single were better than married DM patients about their foot care. Most of DM type II patients in Merjan Teaching Hospital still need to getmore information about adopting a healthy lifestyle into their daily life toimprove theirfoot care and reduce the risk of diabetes complications.

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