

# Investigation of the Effort of Foot Care Behavior in Diabetes Mellitus Patients

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## ABSTRACT

Foot care behavior in diabetes mellitus sufferers is one part of self-management that is very important. Foot care behavior is expected to reduce or prevent complications from Diabetes mellitus. This study aims to identify the behavior of foot care in diabetes mellitus patients in Malang, Indonesia. This study used a cross-sectional study approach. Accidental sampling was used in this study. The number of respondents was 54 people with Diabetes mellitus who did not have gangrene sores. Foot care questionnaire using the Nottingham Assessment of Functional Footcare. Foot care behavior shows the highest distribution is in a good category as many as 29 respondents (53.7%). Most of the respondents took care of their feet by washing / cleaning their feet (74.1%), cutting their toenails (74.1%), not using tight shoes (68.5%), never walking outside the house barefoot (63%), drying the feet after washing / cleaning them. Health workers are expected to always motivate to perform foot care for diabetes mellitus patients to prevent complications.

**Keywords:** Diabetes mellitus, Footcare, Self-management

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## INTRODUCTION

The incidence of diabetes mellitus is one of the public health problems that get attention because from year to year it has increased. According to data from the International Diabetes Federation (2019), it is known that 451 million people have diabetes mellitus in the world, and this number is estimated to increase to 629 million in 2045<sup>1</sup>. Approximately 8.8% of adults aged 20-79 years have diabetes mellitus. Most people with diabetes mellitus are in low- and middle-income countries. The prevalence of diabetes mellitus sufferers in Indonesia reached 10.3 million in 2017, then it is predicted that it will increase to 16.7 million in 2045. Based on these data, Indonesia is ranked 6th in the world for diabetes mellitus sufferers. According to the Basic Health Research (2018), the prevalence of diabetes mellitus sufferers in East Java shows 2.6%. Malang City with the prevalence of diabetes mellitus patients 2.29%<sup>2</sup>.

Foot care is one of the main preventive measures in preventing complications. The goal of foot care is to prevent complications in the feet of people with diabetes mellitus. Foot care behaviors include doing daily foot examinations, maintaining foot hygiene every day, keeping skin soft and smooth every day, cutting nails properly, choosing and wearing footwear properly, and performing first aid in case of a foot injury<sup>3</sup>. Aprilyasari's research (2015) in the Internal Medicine Section of RAA Soewondo Parti Hospital found that out of 82 respondents, 30 respondents (36.6%) had bad independent foot care behavior and 52 respondents (63.4%) had good independent foot care behavior<sup>4</sup>.

The behavior of foot care in diabetes mellitus sufferers can be motivated by several factors. According to Sari & Herlina, (2018), the demographic factors behind foot care in diabetes mellitus patients are age, gender, education level, and duration of illness<sup>3</sup>. After describing the background description above, the research was interested in researching the behavior of foot care in diabetes mellitus patients. With the hope that this research

can also be useful for health workers and their surroundings.

## METHODS

The research design used a cross-sectional approach. The place of research used in this research is Diabetes Mellitus Patient under the working area of Puskesmas Ciptomulyo Malang City. Diabetes Mellitus Patients in Ciptomulyo Village, Malang City. The sampling technique used was accidental sampling for 1 month with inclusion criteria: Willing to be a respondent. Respondents were 54 patients with diabetes mellitus. Foot care questionnaire using modified from the Nottingham Assessment of Functional Footcare (5). Data analysis used descriptive data by reporting the frequency, percentage, and standard deviation.

## RESULTS AND DISCUSSION

**Respondent Demographic Characteristics:** From table 1 it can be seen that the frequency distribution of the demographic data characteristics of the highest respondents is the middle age category 45-59 years as many as 48 respondents (88.9%), female gender as much as 43 respondents (79.6%), the level of elementary education as much as 27 respondents (50%), did not work as many as 31 respondents (57.4%) and had suffered from DM  $\geq$  5 years as many as 28 respondents (51.9%).

**Respondent Foot Care Behavior:** From table 2, it can be seen that the frequency distribution of foot care behavior shows that the highest distribution is in a good category, namely as many as 29 respondents (53.7%).

**Identification of Foot Care Behavior Effort:** Based on table 3, the efforts of most respondents in caring for their feet were carried out by washing / cleaning their feet (74.1%), cutting toenails (74.1%), not using tight shoes (68.5%), never walking outside houses barefoot (63%), drying their feet after washing / cleaning them.

Foot care behavior shows the highest distribution is in a good category. Fata, Wulandari, & Triyanti (2020) that the

behavior of foot care in diabetes patients is an important component to prevent diabetic feet<sup>6</sup>. The components of foot care in diabetes patients include<sup>1</sup> choosing the right footwear, (2) checking the condition of the feet<sup>3</sup>, and using a foot moisturizer<sup>7</sup>. DM patients in Ciptomulyo Village RW.02 Malang City mostly use sports shoes as footwear, namely, 30 people (55.6%) and only 2 people (3.7%) often use flip-flops, the remaining 44 people (81.5%) rarely use flip-flops. In addition, in choosing footwear, none of the respondents used tight shoes and only a small proportion of 4 people (7.4%) had shoes with a pointed front.

Checking the condition of the feet regularly serves to prevent complications of diabetic feet early and can even prevent new sores from appearing which are marked by pain, swelling, numbness, and a change in skin color<sup>8</sup>. Activities to check the condition of the feet include washing the feet every day using soap and warm water, drying the feet carefully, including cleaning between the fingers and cutting the nails. As many as 40 people (74.1%) frequently washed their feet and cut their nails. The behavior of drying the feet between the toes of the DM patients is half of the number of respondents around 27 people (50%) often do it.

The use of foot moisturizer in DM patients aims to prevent dry and cracked skin. According to Roza, Afriant, & Edward (2015), dry skin can be a medium for easy material reproduction, which can lead to the risk of diabetic ulcers<sup>9</sup>. More DM patients use moisturizer only between their fingers as many as 34 people compared to using moisturizing cream on their entire legs, which is only about 11 people.

DM foot care behavioral efforts are an effort to prevent further complications<sup>10</sup>. According to Suib (2017), foot care behavior efforts in DM patients include<sup>1</sup> prevention of foot injuries<sup>2</sup>, initial management of foot injuries<sup>3</sup>, temporary treatment of foot injuries<sup>11</sup>. DM patients, the majority of respondents, did not take care of

wounds when the respondent had abrasions or burns. But respondents wash/clean their feet, cut their toenails, don't use tight shoes, never walk outside the house barefoot, dry their feet after washing / cleaning them. Inaccuracy in providing wound care to DM patients will risk the occurrence of diabetic foot wounds, even it will be more complex if there are other causes, such as poor blood circulation, neuropathy or angiopathy<sup>12</sup>.

Table 1. Frequency distribution of respondents' demographic characteristics

Characteristics	Frequency (N)	%age
<b>Age</b>		
45-59 years old	48	88,9
60-74 years old	5	9,3
75-90 years old	1	1,9
$\bar{X}$ : 55, Me: 55, SD: 5,58, Min.score: 45, Max.score: 76		
<b>Gender</b>		
Female	43	79,6
Male	11	20,4
<b>Education Level</b>		
No Education	5	9,3
Elementary School	27	50
Junior High School	14	25,9
Senior High School	8	14,8
<b>Occupation</b>		
Working	23	42,6
Not working	31	57,4
<b>Suffering from DM</b>		
<5 years	26	48,1
≥5 years	28	51,9

Table 2. Frequency distribution of respondents' foot care behavior

Behavior Category	Frequency (N)	%age
Good	29	53,7
Poor	25	46,3
Total	54	100

Table 3: Identification of Foot Care Behavior Effort

No.	Items	Often	Sometimes	Rarely	Never
1.	Do you examine your feet?	15 (27.8)	21 (38.9)	18 (33.3)	0
2.	Do you check your shoes before you put them on?	10 (18.5)	12 (22.2)	7 (13)	25 (46.3)
3.	Do you check your shoes when you take them off?	9 (16.7)	9 (16.7)	10 (18.5)	26 (48.1)
4.	Do you wash your feet?	40 (74.1)	9 (16.7)	3 (5.6)	2 (3.7)
5.	Do you check your feet are dry after washing?	27 (50,0)	13 (24.1)	7 (13,0)	7 (13,0)
6.	Do you dry between your toes?	24 (44.4)	16 (29.6)	6 (11.1)	8 (14.8)
7.	Do you use moisturising cream on your feet?	11 (20.4)	9 (16.7)	3 (5.6)	31 (57.4)
8.	Do you put moisturising cream between your toes?	34 (6.3)	3 (5.6)	7 (13,0)	10 (18.5)
9.	Are your toenails cut?	40 (74.1)	11 (20.4)	3 (5.6)	0
10.	Do you wear sandals?	8 (14.8)	4 (7,4)	17 (31.5)	25 (46.3)
11.	Do you wear trainers?	30 (55.6)	4 (7.4)	15 (27.8)	5 (9.3)
12.	Do you wear lace- up shoes?	0	5 (9.3)	12 (22.2)	37 (68.5)
13.	Do you wear pointed- toed shoes?	4 (7.4)	7 (13)	3 (5.6)	40 (74.1)
14.	Do you wear flip- flops?	2 (3.7)	1 (1.9)	7 (13)	44 (81.5)
15.	Do you break in new shoes gradually?	8 (14.8)	10 (18.5)	9 (16.7)	27 (50.0)
16.	Do you wear shoes without socks/ stockings/tights?	4 (7.4)	8 (14.8)	5 (9.3)	37 (68.5)
17.	Do you change your socks/stockings/tights?	27 (50)	16 (29.6)	7 (13)	4 (7.4)
18.	Do you walk around the house in bare feet?	12 (22.2)	7 (13)	20 (37)	15 (27.8)
19.	Do you walk outside in bare feet?	7 (13)	3 (5.6)	10 (18.5)	34 (63)
20.	Do you use a bath thermometer?	18 (33.3)	14 (25.9)	8 (14.8)	14 (25.9)
21.	Do you put a dry dressing on a blister when you get one?	0	12 (22.2)	14 (25.9)	28 (51.9)
22.	Do you put a dry dressing on a graze, cut, or burn when you get one?	3 (5.6)	10 (18.5)	11 (20.4)	30 (55.6)

## CONCLUSION

Foot care is performed by the majority of patients with Diabetes mellitus by washing / cleaning their feet, trimming their toenails, not using tight shoes, never walking outside the house barefoot, drying their feet after washing / cleaning them. For this reason, health workers are expected to always motivate to perform foot care for diabetes mellitus patients to prevent complications.

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