

Knowledge And Foot Care Behavior Among Diabetic Patient

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Abstract

Purpose: Diabetic foot ulcers can significantly impact the physical and psychosocial aspects of a patient's life, leading to a reduced quality of life and an increased risk of death. To prevent complications from diabetic foot wounds, it is essential to have good knowledge and good foot care behaviors. To identify the knowledge and foot care behavior of patients with diabetes mellitus.

Methods: The study employed a descriptive research design with a cross-sectional approach. The research focused on 48 respondents who were type 2 diabetes mellitus patients who had visited the Internal Medicine Clinic in the last month. The total sampling technique was used to select the respondents. The instruments used in the study were The Foot Care Knowledge Questionnaire and the Nottingham Assessment of Functional Footcare.

Results: The results showed that the majority of respondents were elderly aged 56-65 years (37.5%), female (60.4%), housewives (29.2%), married (87.5%), higher education (33.3%), income >2,500,000, had diabetes <10 years (62.5%), had complications (56.3%) with hypertension type (59.3%), never received education about foot care behavior (83.3%), knowledge of foot care behavior was good (75.0%), and diabetic foot care behavior was good (75.0%).

Keywords: Knowledge, Diabetes Mellitus, Foot Care Behavior

Introduction

Diabetes mellitus (DM) is one of the chronic diseases that has significant implications for public health globally. In low-middle-income countries, the prevalence of diabetes mellitus is increasing at a faster rate than in other countries [1]. Based on data indicates that there has been a 10.5% increase in the number of adults (aged 20-79 years) diagnosed with diabetes. Of these individuals, half were unaware of their condition. In addition, the prevalence of diabetes in Indonesia has increased in the last ten years. This figure is projected to reach 28.57 million by 2045, representing a 47% increase from the 19.47 million in 2021 [2]. Based on Basic Health Research data in 2018 indicates that Yogyakarta Province has the third highest incidence of diabetes mellitus among all provinces in Indonesia [3]. The prevalence of diabetes mellitus in the Special Region of Yogyakarta reached 4.5%, while Yogyakarta City alone has a prevalence rate of 4.9%, which is higher than the other four districts. In 2022, the number of individuals who have diabetes in Yogyakarta City reached 28,420 people, which is equivalent to 86.6% of the total population. This represents an increase from the previous year when the number of cases reached 26,720 [4].

Long-term (chronic) diabetes mellitus is often associated with complications [5]. Diabetes complications consist of macrovascular and microvascular problems. The most prevalent complication is a pathological alteration of the lower extremities, which is medically designated as diabetic foot [6]. Diabetic foot is a severe impact of diabetes

mellitus, manifesting as open skin wounds (ulceration), infection, and tissue damage that can result in amputation. This condition affects 6% of individuals with diabetes mellitus [Mishra & Schaper in 7]. Diabetic foot ulcers account for approximately 85% of all amputations in patients who are not due to traumatic injury but rather caused by the spread of infection and gangrene [Ahmeti & Jain in 8]. Diabetic foot ulcers have the potential to affect the physical and psychosocial aspects of a person's life, which can result in a decreased quality of life and increased risk of death [Pereira & Rice JB in 9]. To prevent diabetic foot ulcers, it is essential for diabetic patients to have knowledge about foot care and to exhibit proper foot care behavior.

The Ministry of Health of the Republic of Indonesia has provided guidelines for foot care for people with diabetes. These guidelines include daily cleaning of feet using water and soap, applying moisturizers to dry feet, and avoiding moisture between the toes to prevent fungal infections. Additionally, it is recommended to cut toenails straight, not too close to the skin, and to wear properly fitting footwear such as shoes or sandals to protect the feet from injuries. Before wearing, it is advisable to check shoes for pebbles or sharp objects. Minor wounds should be treated and covered with a clean cloth or gauze. Regular checks for signs of inflammation in the feet are necessary, and if wounds are present, it is essential to consult a doctor immediately [10].

The results of the research conducted by [9] Shows that the knowledge factor about foot care significantly affects predictors of foot care behavior in Indonesia. The study's mean foot care knowledge score was 5.33 ± 2.2 , indicating a poor overall level of foot care knowledge. The mean standard score regarding foot care behavior was 47.4, indicating poor overall foot care behavior. Research findings by [11] 84.8% of participants needed better knowledge, and only 8.8% followed good care practices. Previous research results showed that 72.8% of people living with diabetes had poor foot care behavior [12]. In contrast to the findings of [13], which indicated that 38% had good knowledge about diabetic foot care, and 22% were known to follow good diabetic foot care practices.

In light of the above description, which was obtained from the results of previous studies, the inconsistencies that arise in this study have attracted the attention of researchers, who have sought to examine the knowledge and foot care behavior of patients with diabetes mellitus at PKU Muhammadiyah Yogyakarta Hospital.

Methods

This study employed a descriptive cross-sectional design and was conducted at the PKU Muhammadiyah Yogyakarta Hospital between October 2023 and March 2024. The study sample consisted of 48 patients with type 2 diabetes mellitus who underwent an outpatient examination at the Internal Medicine Clinic of PKU Muhammadiyah Yogyakarta Hospital during the last month. The non-probability sampling method with a total sampling technique was employed to obtain the samples.

The research variables were knowledge of foot care behavior as the independent variable and foot care behavior as the dependent variable. The research instrument is a questionnaire, namely the Foot Care Knowledge Questionnaire, which consists of 11 items. This questionnaire was developed by [14] in English and has been backward translated into Indonesian. It has also carried out a validity test using the Content Validity Index (CVI), which shows the results of 0.91 and acceptable test-retest reliability with $r = 0.67-1$, Kurden-Richardson 20 (KR-20) analysis was also carried out with the results of

the KR-20 coefficient of 0.37 by [15]. Subsequently, the diabetic foot care behavior questionnaire, developed by [16] and modified for Indonesian using the back translation method, was tested for reliability using Cronbach's alpha. The resulting Cronbach's alpha was 0.53, and the reliability coefficient was 0.83 ($r > r\text{-table} = 0.532$) by [17].

The data were collected through direct interviews with respondents. Before the interview, the researcher informed the prospective respondents of the research procedures, objectives, and benefits. This was done to obtain informed consent. Once the respondents had been told and agreed to participate, the researcher requested that they sign the consent form, thereby becoming research respondents. The data were analyzed using SPSS 27 with descriptive frequency statistics. This study has obtained ethical approval from the Research Ethics Committee of the Training Secretariat of PKU Yogyakarta Hospital, with certificate number 00011/KT.7.4/I/2024.

Results

According to Table 1, the majority of participants in this study are in the 56-65 age group (37.5%), female (60.4%), housewives (29.2%), married (87.5%), have higher education (33.3%), with an income $>2,500,000$, have had diabetes for less than ten years (62.5%), have complications (56.3%) with type of hypertension (59.3%), have never received education about foot care behavior (83.3%), and have good knowledge of foot care behavior (75.0%). Additionally, 75.0% of the participants showed good diabetic foot care behavior.

Table 1
Sociodemographic Characteristics, Knowledge of Foot Care Behavior, and Foot Care Behavior of People with T2DM (n=48, n=27)

Characteristics/ Study Variables	Frequency	Percentage
Age		
Late Teens (17-25)	1	2.1%
Early Adulthood (26-35)	1	2.1%
Late Adults (36-45)	2	4.2%
Early Elderly (46-55)	12	25.0%
Late Elderly (56-65)	18	37.5%
Elderly (>65)	14	29.2%
Gender		
Male	19	39.6%
Female	29	60.4%
Education Level		
Primary Education (Elementary and Junior High School)	16	33.3%
Secondary Education (Senior and Vocational High School)	14	29.2%
Higher Education (College)	16	33.3%
Not In School	2	4.2%
Employment Status		
Not Working	4	8.3%
Laborer	4	8.3%
Self-employed / Entrepreneur	8	16.7%
Private Employee	7	14.6%
Civil Servant	1	2.1%
Housewife	14	29.2%
Retired	10	20.8%
Marital Status		
Married	42	87.5%

Unmarried	2	4.2%
Widower	2	4.2%
Widowed	2	4.2%
Income Level		
<2.500.000	14	29.2%
2.500.000	5	10.4%
>2.500.000	17	35.4%
No Income	12	25.0%
Length of Time with Diabetes		
< 10 Years	30	62.5%
≥ 10 Years	18	37.5%
Complications		
Has Complications	27	56.3%
No Complications	18	37.5%
Had Complications, but Recovered	3	6.3%
Diabetic Foot Care Behavior Education		
Ever	8	16.7%
Never	40	83.3%
Knowledge of Foot Care Behavior		
Good	36	75.0%
Satisfactory	11	22.9%
Poor	1	2.1%
Diabetes Foot Care Behavior		
Good	36	75.0%
Less Good	12	25.0%
Total	48	100,0%
Types of Complications		
Heart	2	7.4%
Hypertension	16	59.3%
Diabetic Retinopathy	1	3.7%
Multiple Complications	8	29.6%
Total	27	100,0%

Source: Primary Data (2024)

Discussion

1. Knowledge of Foot Care Behavior

In this study, most respondents had good knowledge of foot care behavior. One researcher assumes that this is caused by doctor advice, the custom of washing feet before prayer, and health education via television, radio, and the internet [13]. Increasing patient foot care knowledge and understanding of foot-related risks and consequences will result in better diabetes foot care behavior [15], [18], [19]. This research shows that knowledge of good foot care behavior may be caused by factors influencing it.

In this study, although respondents had good knowledge categories, their lack of education in the practical aspects of daily foot care could hinder their foot care behavior [20], caused by a lack of appropriate education [21]. Two studies discovered that the absence of patient education in foot care resulted from nurses and physicians prioritizing other aspects, such as blood glucose and diet management, over foot care education during diabetes education. Patients only received foot care advice after the onset of diabetic foot disease [21], [22]. In this study, 83.3% of respondents had never received education regarding foot care behavior.

Regarding age, most respondents were late elderly (56-65 years). Elderly respondents can also perform good foot care because of their more significant experience and skills. Younger age is associated with the ability to access information. However, increasing age will be followed by increasing knowledge and skills [23]. Most respondents have a high level of education. A high level of education was assumed, with adequate knowledge of disease management [12], [24]. Highly educated people are expected to be more likely to read and receive information about diseases, care for their feet, and understand the information provided by medical staff in healthcare settings [11].

2. Foot Care Behavior

This study found that most respondents engaged in good foot care behavior. This study's results are consistent with previous research stating that most diabetes mellitus sufferers engage in good foot care [15]. However, this study's results do not match previous research, which stated that most diabetes mellitus sufferers had poor foot care behavior [12]. The difference between this study's results and those of previous studies could be due to factors that influenced it.

Most of the respondents were late elderly (56-65 years). Age is a determining factor in diabetes foot care practices, with older patients having better diabetes foot care behaviors than younger patients [9], [24]. Elderly respondents can carry out good foot care because they have more experience and skills so they are, making them wiser in carrying it out [23]. The majority of respondents were women. Gender influences diabetes foot care behavior, with women appearing to be better at foot care than men [11], [25], [26]. Men seem to pay less attention to foot care because social habits and daily life require them to work [27].

In terms of marital status, the majority of respondents are married. Patients who have a partner and family support show better foot care behavior [27], [28]. Powered by [21] who reported that lack of family support compromised diabetic foot care behavior. Furthermore, the majority of respondents earned more than the district minimum wage. Patients with higher incomes and better access to health services showed increased diabetic foot care behavior [15], [18], [29], [30]. A high income can also increase self-efficacy in diabetes mellitus sufferers by increasing the growth of positive perceptions of their disease [15].

The limitations of this study include the influence of the crowded polyclinic environment and the risk of disturbing the comfort and focus of respondents in filling out the questionnaire. In polyclinics, respondents frequently encounter crowded or crowded conditions, particularly when awaiting a physician's consultation or procuring pharmaceuticals from the pharmacy. The completion of the questionnaire may be disrupted by the necessity of patients being called to be examined by a doctor. In such instances, the patient must resume the questionnaire in the exact location (in front of the clinic) or in a different location (at the pharmacy), where the atmosphere may also be crowded and distracting. This may result in a lack of focus or optimal understanding of the questions in the questionnaire. The following research limitation lies in the type of complication in the study. Researchers have not conducted more profound research on the complications of diabetic foot ulcers.

Suggestions for future researchers It is hoped that this can be used as evaluation material for better research on foot care behavior in patients with diabetes mellitus and to examine more deeply the types of diabetic foot ulcer complications experienced by

patients. In collecting data, it is hoped that future researchers will use other methods, such as interviews and observations. Future researchers can also conduct research with a larger sample to better understand the relationship between the variables studied. Include other variables that can explore more information related to factors that influence foot care behavior in patients with diabetes mellitus.

Conclusion

This study shows that most diabetes mellitus sufferers have good foot care knowledge and behavior. It is essential to pay attention to the level of knowledge and foot care behavior in diabetes mellitus sufferers to prevent complications from diabetic foot ulcers. Educating and counseling programs about the importance of foot care for diabetes mellitus patients by involving the patient's family can reduce the risk of diabetic foot ulcers.

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Author Contributions

First author: Designing the research design together with guidance from the second author, collecting data through preliminary studies, interviews, and questionnaires by the designed methodology, analyzing data using appropriate statistical techniques, preparing the initial draft of the article based on the research results, contributing to the revision of the manuscript with input from the supervisor.

Second Author: Guided planning and conducting the research, provided direction in data analysis and interpreting the results, assisted in writing the manuscript by giving academic insights and research experience, played a role in validating the findings and ensuring the accuracy of data interpretation, provided feedback and made revisions to the manuscript to improve quality and conformity to academic standards.

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