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Knowledge And Foot Care Behavior in Patients With Diabetes Melitus: Study of Corelation

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ABSTRACT

Background: Hyperglycemic conditions can lead to microvascular (27.2%) and macrovascular (53.5%) complications. Hyperglycemia causes damage to nerve cells, resulting in neuropathy that leads to decreased protective sensation in the feet. This condition causes individuals with diabetes mellitus (DM) to be unaware of foot injuries. Proper foot care is an essential part of preventing diabetic foot ulcers and can be carried out by individuals with DM at low cost and with proven effectiveness. Foot care behavior refers to actions taken to maintain foot hygiene in diabetic patients and to prevent early injuries that could lead to infection risk. Knowledge serves as the foundation for behavior change and determines an individual's level of ability.Methods:This research is a quantitative study using a cross-sectional design. The population consists of all individuals with DM, with a sample size of 57 respondents in the Surakarta City prolanis group. The sampling technique used was accidental sampling. Data were analyzed using univariate and bivariate analysis.The research instrument used DFKS for knowledge and NAFF foot care behavior. Results:The majority of respondents had a low level of knowledge (64.9%) and poor foot care behavior (71.9%). Bivariate analysis using the chi-square test showed a p-value < 0.05 (0.018).Conclusion:There is a significant relationship between the level of knowledge and foot care behavior.

Keywords: Behavior; Diabetes Melitus; Foot Care; Knowledge; Preventions

INTRODUCTION

Diabetes Melitus (DM) is a metabolic disorder characterised by elevated blood glucose levels (hyperglicaemia) due to impaired insulin secretion and insulin action. Type II diabetes is caused by a decrease in sensitivity to insulin (insulin resistance) or a decrease in the amount of insulin produced. The prevalence of diabetes mellitus according to blood glucose test result increased from 6,9% in 2013 to 8,5% in 2018. This figure indicates that only about 25% of people with diabetes are aware that they have the condition. The number of people with DM in Indonesia reached 8,4 million in 2000 and is estimated to increase to 21,3 million by 2030. Hyperglicaemia can lead to microvascular (27,2%) and macrovascular (53,5%) complication. Hyperglicaemia causes nerve cell damage,resulting in neuropathy that leads to a decrease in protective sensation in the feet. This causes people with DM to be unware of wounds on their feet. Peripheral arterial complications in DM also cause foot ulcers due to impaired circulation to the feet. The precentage of DM patients suffering from diabetic ulcer 12-15% and occurs in the lower extremities. Diabetic foot ulcers account for 90% of amputations in DM patients. The prevalence of diabetic foot ulcer patients admitted to hospitals is 13% and 26% are treated as outpatients.[1,2]

The management of diabetes mellitus, particularly type II, as a preventive measure against diabetic foot ulcers is through education or health education and foot care. Proper foot care is an important part of the process of preventing diabetic foot ulcers carried out by people with diabetes mellitus at low cost and proven to be effective. Foot care behavior refers to actions taken to maintain the cleanliness of diabetic patients feet, preventing injuries that could lead to infection risks. Diabetes mellitus patients must be well-informed about diabetic foot care to prevent diabetic ulcers and amputations.[3–5]

Research result show that 51,4% of DM patients have poor foot care behaviour and 48,6% of DM respondents have good foot care behaviour. This study is supported by previous research showing that 57,8% of respondents have poor foot care behaviour, while 34,9% of respondents have good foot care behaviour. Foot care behaviour among DM patients is still low or poor due to a lack of exposure to information related to foot care. Foot care

behaviour education is important to prevent DM complications, especially diabetic ulcers. This is because health maintenance behaviour can be achieved by increasing patitns health knowledge.[5,6]

Knowledge forms the basis for behavioural change and determines an individuals level of health literacy, which is a serious issue in Indonesia. The number of Diabetes Mellitus patients in West Java has also increased over the past five years. In 2013, it reached 1,3%, while in 2018 it reached 1,7%. Various complications are caused by foot care behaviour, which is an action taken to maintain the cleanliness of diabetic patients feet and prevent early injuries to the feet that can lead to the risk of infection, which if not handled properl, will result in amputation. Knowledge is the foundation for individual behaviour change and determines an individuals ability to perform self care.[7–9]

Low levels of knowledge about foot care can worsen health conditions. Meanwhile, research findings indicate that according to the Central Java Provincial Health Office in 2018, diabetes mellitus ranked second after hypertension in Central Java and accounted for 20,57% of all new cases of non-communicable diseases. In 2018, there were 1658 new cases of diabetes mellitus.

METHODS

This study is quantitave study with a cross-sectional design. The research location was at Community Health Centre (Puskesmas) Pajang of Surakarta. The researcher wanted to determine the relationship between the level of knowledge (independent variabel) and foot care behaviour (dependent variabel)in people with diabetes mellitus. The population in this study was all DM patients in the Puskesmas area, with a sample size of 57 respondents. The sampling technique used accidental sampling in the Surakarta City prolanis group. The inclusion criteria used were : a) patients with diabetes mellitus; b) male and female respondents; c) respondents in the early adult to elderly age category. The exclusion criteria were : a) DM patients treated in hospital; b) DM with diabetic ulcer.

The knowledge instruments used was the Diabetic Foot Care Knowledge Scale (DFKS) with 64 questions. The behaviour instrument used was the Nottingham Assessment Functional Footcare (NAFF) questionare with 26 questions consisting of 6 indicators.

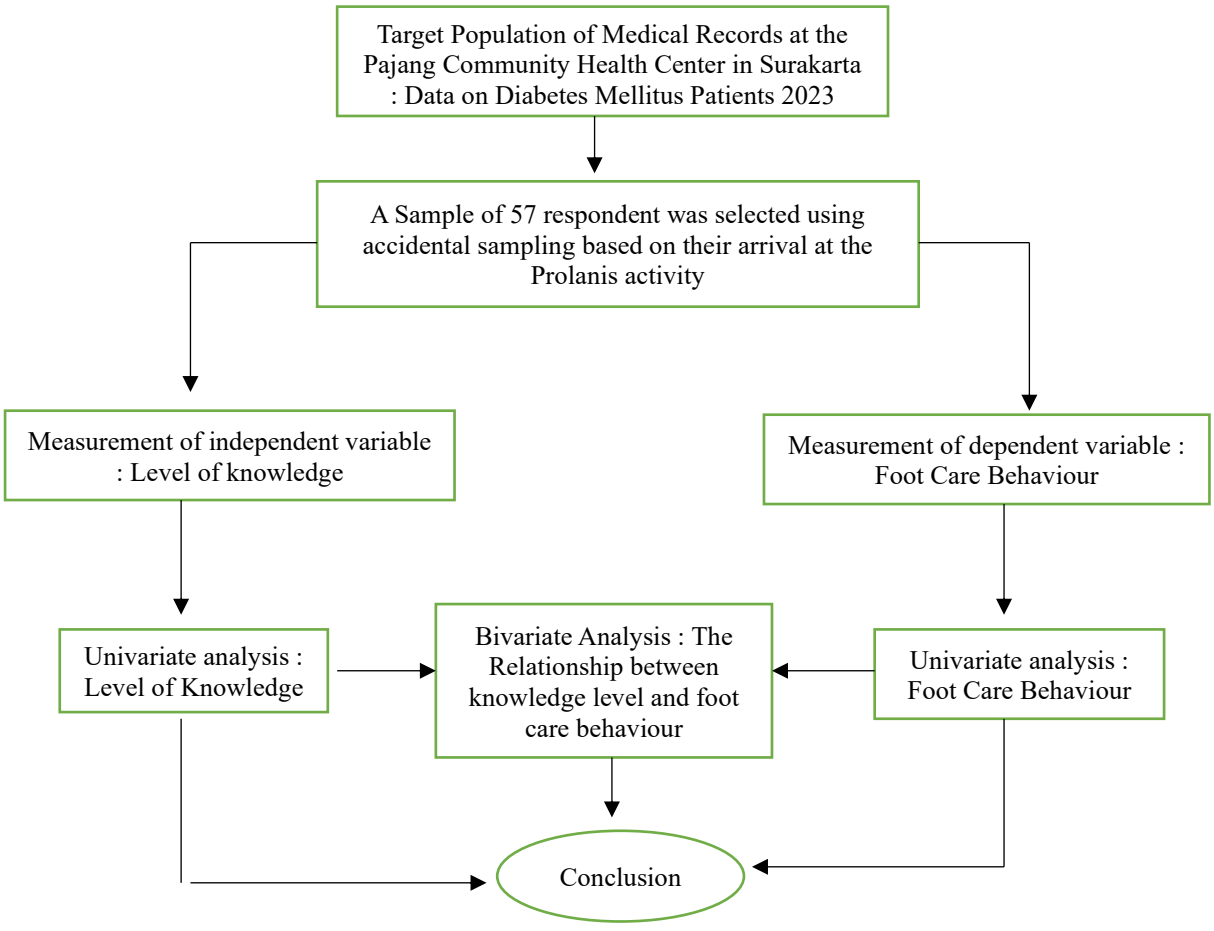

Figure 1. Research Stages Flowchart

RESULTS

The study was conducted on 57 respondents with Diabetes Mellitus, with the following result :

Table 1. Frequencies Distribution of Knowledge and Behaviour

Variable	Categories	Frequency (f)	Percentage (%)
Knowledge	Good	5	8,8
	Moderate	15	26,3
	Poor	37	64,9
Behaviour	Good	16	28,1
	Poor	41	71,9

Based on the table above, it can be concluded that the majority of respondents have a level of knowledge about foot care in the insufficient category, amounting to 64,9%. The majority of respondents foot care behaviour is poor, amounting to 71,9%.

The data from the bivariate analysis of the relationship between the level of knowledge and foot care behaviour of respondents can be seen in the following table :

Table 2. Analysis of Relationship Beetween Knowledge and Foot Care Behaviour Variables

Level of Knowledge	Foot Care Behaviour for DM		p value
	Poor	Good	
Poor	25 (43,8%)	11 (19,2%)	
Moderate	13 (22,8%)	3 (5,2%)	0,018*
Good	3 (5,2%)	2 (3,5%)	

Based on the table above, the result of bivariate analysis on the variable level of knowledge with foot care behaviour show a p value < 0,05 (0,018), indicating a significant association beetween level of knowledge with foot care behaviour among diabetes mellitus patients

DISCUSSION

The result of the study indicate that the majority of respondents, namely 64,9%, have a low level of knowledge about foot care in patients with diabetes mellitus (DM). This finding indicates that there are still many DM patients who do not understand the important of foot care as part of effort to prevent complications, especially diabetic foot ulcers. This lack of knowledge may be influenced by several factors, including educational level, access to health information, personal experinces and the role of health workers in providing education. Knowledge is an important domain in shaping health attitudes and behaviour, which are usually obtained through direct experience, formal education and health education.[10–12]

Foot care in diabetic patients is very important because chronic complications such as peripheral neuropathy and vascural disorder cause loss of protective sensation and decreased blood flow to the lower extremities. Patients ignorance of the early signs of wounds or infections can lead to delayed treatment, which ultimately increases the risk of infection, ulceration and even amputation. This study is consistent with previous research findings that low level of knowledge among diabetic patients correlate with poor daily foot care practices. This is exacerbated by the assumption that minor wounds are harmless, as well as a lack of understanding about the long term impact of poor glucoses control on foot health.[10,13,14]

From these results, it can be conclude that increase knowlefge is a crucial first step in preventing foot complications in diabetic patients. Therefore, interventions in the form of regular and practical foot care education and training are highly recommended, especially for groups with low knowledge.

The result of the study show that the majority of respondents have poor foot care behaviour. Poor foot care behaviour in people with diabetes mellitus is a concerning condition, as preventive measure againts diabetic foot complications are highly dependent on reguler self care habits. Inappropriate or neglected foot care can lead to ulcers, infections and even amputation, especially in patients with peripheral neuropathy or peripheral vascular disorder.[15,16] This low level of foot care behaviour can be influenced by various factors, such as lack of knowledge, low self-awareness, minimal education from health workers, economic limitation and indifferences towards foot condition. Health behaviour is influenced by three main factors, namely predisposition (knowledge, attitude), enablers (facilities, support) and reinforcers (social influenced,experience). This study is in line with previous research findings which state that there are still many diabetic who do not perform routine foot care, such as washing their feet with warm water, checking the condition of their feet every day, avoiding walking barefoot,

or wearing appropriate shoes. In fact, these steps are simple but very important procedures to prevent complications.[17–20]

Low behaviour may also occur due to a gap between knowledge and practice, where a person know what to do but is not motivated to do it consistently. Therefore, in addition to education, a motivational and behaviour modification approach is needed, such as community based counselling, family involvement and the role of health cadres as regular reminder in the implementation of proper foot care.

The results of the study show that there is a relationship between the level of knowledge with foot care behaviour in patients diabetes mellitus. these finding indicate that the higher a person's level of knowledge about DM, the better their care behaviour. This is in line with the Health Belief Model (HBM) theory, which states that knowledge is one of the main factors that influence health behaviour, because knowledge shapes individuals perception of disease, benefits and barriers to performing health actions. Knowledge about DM includes understanding their causes, symptoms, complications and management methods such as diet, exercise, medication and foot care. Individuals with good knowledge tend to be better able to identify importance of blood sugar control, understans the consequences of unhealthy behaviour, and have greater motivations to engage in self care. Thus, knowledge is an important foundation for building awareness, attitude and actions that support independent and suistanable disease management.[21–24]

This study is in line with several previous studies which state that DM patients with high knowledge are more consistent in conducting routine blood sugar checks and taking medication as recomended. Knowledge has a significant influence on patients compliance in self care, including foot care. The level of correlation in this study, with a p value of 0,018, can be considered weak. This may be because a high level knowledge does not automatically guarantee good behaviour, as behaviour is also influenced by other factors such as motivation, family support, economic conditions, cultural belief and personal experiences. Therefore, although increase knowledge is important, nursing interventions also need to consider psychosocialand environmental factors that influence behaviour change. Other factors that influence behaviour implementation besides knowledge include motivation, family support, old habbit, physical limitations or lack of reinforcement from health care professionals. The Health Belief Model (HBM) theory states that even though individuals are aware of the risk of complication (perceived severity) and the benefits of preventives measures (perceived benefit), healthy behaviour will not be formed if it is not accompanied by internal motivation (cue to action), self efficacy and minimal barrier.[19,25–27]

While this study confirms a positive correlation between knowledge level and foot care behavior, contemporary literature highlights that cognitive information transfer alone is often insufficient to ensure long-term adherence without the mediation of self-efficacy. (28)In their analysis emphasized that self-efficacy serves as a crucial mediating mechanism that bridges the gap between diabetes education and concrete self-care management implementation. This complexity is validated by a recent study by [29] which identified that psychosocial barriers often distort the implementation of preventive foot care practices, even in populations with adequate access to primary healthcare. This dissonance phenomenon between health literacy and actual practice was also described by[30], where patients' cognitive function and attitudes toward the disease proved to be more dominant catalysts in shaping behavior than simply the transfer of didactic information. Specifically [31] found a significant linear relationship where patients with low self-efficacy tended to neglect daily foot inspections despite understanding the clinical risks, a finding consistent with [32] who emphasized that a high disease burden without strong self-efficacy will drastically degrade self-care adherence. Therefore, the nursing intervention paradigm must transform from conventional education to a holistic approach oriented towards strengthening patient self-efficacy.

The result indicated that structured and continous health education is crucial for improving foot care behaviour in DM patients. Nurses an important play role in providing accurate information, using communication methods appropriate to the patients backgrounds (age, education, culture), and evaluating the extent to which the information can be understood and applied in daily life. Nurses need to conduct educational interventions that are not only informative but also tranformational, capable of tangibly changing patients attitude and behaviours. Education should be conducted periodically, using a personalised, participatory and motivation-based approach, so that patients have the awareness, willingness and ability to perform foot care independently.[33–35]

CONCLUSION

The conclusion of this study is that there is a relationship between the respondents level of knowledge and the foot care behaviour of people with diabetes mellitus. Further research is needed to test intervention that can improve the foot care behaviour of people with diabetes mellitus. Health services, both at community health centres and hospitals, need to provide regular education on foot care techniques or intervention that people with DM can do to prevent ulcers.

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