

## **Perspective of Diabetes Mellitus Patients with Pedis Ulcer Regarding Nurses' Roles in Assisting Patients**

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### **ABSTRACT**

#### **Introduction**

Diabetes mellitus (DM) is a metabolic syndrome characterized by high blood glucose levels. Having high and uncontrolled Blood glucose levels could lead to severe complications such as macrovascular and microvascular disorders including pedis ulcers. The focus of this study was assisting role of nurses expected by patients with chronic diseases having complications of pedis ulcers.

#### **Methods**

Qualitative design of phenomenology was chosen to obtain individual and in-depth information. Five participants were determined by purposive sampling. In-depth interviews were conducted using recording devices, semi-structured interview guides, and field notes. Colaizzi's Qualitative content analysis approach used for determining the result.

#### **Results**

Themes in this study were etiology of foot ulcer, feeling expression about their conditions, DM treatment practice based on their knowledge, the role of nurses in illness condition.

#### **Conclusion**

The study provides a description of nurses' role expected by patients with pedis ulcers which include to assist and take care of them in illness condition.

#### **Keywords**

Pedis Ulcer; Diabetes Melitus; Nurses' role; Assisting patient

### **INTRODUCTION**

Diabetes Melitus (DM) is a metabolic disorder are characterized by hyperglycemia (increased serum glucose level), caused by the lack of insulin hormone, decreased insulin effects and both (Kowalak, Welsh, Mayer, 2011). Hyperglycemia that occur cause cells cannot use glucose as a source of energy (Silbernagl, 2006). The result of this hyperglycemia condition when patient have cannot controlled it is acute and chronic complication for DM patients.

Diabetes mellitus (DM) or impaired glucose tolerance is diagnosed based on the examination results of blood sugar levels. *Riset Kesehatan Dasar* (Riskesdas) conducted in 2013 obtained

data and classified DM cases as follows: 12,191,564 people (6.9%) are DM patients, 52,830,111 (29.9%) patients have Disturbed Glucose Tolerance and 64,668,297 people have Disturbed Fasting Blood Sugar from the total Indonesian population of 176,689,336 people. There are 5.7% DM patients in 2007 and increased to 6.9% in 2013 (Data and Information Center of Ministry of Health, 2014). Complications that may occur due to hyperglycemia are damage to various body systems, especially nerves and blood vessels. The Indonesian Data and Information Center of Ministry of Health, 2014 recorded prevalence of 8.7% neuropathy causing foot ulcers visited in 2011 to RSUP Dr. Cipto Mangunkusumo as complication of Diabetes Mellitus.

Foot ulcers on DM patients do not only affect the patient's physically, but also their psychosocial. Qualitative research done by Ningsih, (2008) shows psychosocial experiences in DM patients with foot ulcers that illustrate, among others: face various fears, become helpless, become a burden on the family and blame themselves. Because chronic complications due to DM are a source of stress for patients, family support, environment and all of them needs nursing services. Systematic and comprehensive nursing services support is expected to reduce physical complaints and psychosocial stress. Based on the above facts, the researchers are interested in conducting research in the service that illustrates the role of nurses in assisting DM patients with foot ulcers.

## **METHOD**

This was a qualitative research method through a phenomenological approach. The researcher explored the experiences of 5 DM participants with foot ulcers about the expected role of a nurse in assisting patients with chronic diseases (Polit & Beck, 2010). Participants' experience was freely expressed and explored naturally without manipulation. The unearthed experience was be described and explained in narrative form as a result of research (Creswell, 1998).

The participants were 5 people aged around 45-64 years. The participants consisted of 2 women and 3 men. The level of education of participants was from elementary school to undergraduate level. 4 participants were still actively working as entrepreneurs, while 1 participant was a housewife. The participants experienced DM for at least 2 years and the longest period was 12 years. All participants received health insurance from the government to got DM therapy both oral hypoglycemia and insulin.

## **RESULTS**

Thematic analysis results in this study found 4 themes based on the interviews. The themes identified were: causes of foot ulcers, expressions of feeling with current conditions, DM treatment practices based on their knowledge, description of the role of nurses with illness conditions.

Theme 1: The cause of foot ulcers is obtained based on interviews with participants of various causes of foot ulcers experienced currently. The supporting sub-themes of this theme are: causes of foot ulcers due to trauma, improper use of footwear, and tiredness causes high blood sugar and is prone to injuries such as foot ulcers. Supporting statements from participants for the sub-theme is:

The sub theme of leg ulcers due to trauma is supported by the following statement:

*“Yes, at the end of April, I was cleaning the bathroom and got porstex, so I go water fleas that month.(P4,l.34). It was spread quickly.(P4,l.34). Yes, this wound was not healing and when I apply a letter for my child’s education, someone asked me..”what is that black things on your foot?(P4, l.42). Yes, between the fingers. Then I was brought to the doctor and it was already .....”(P4,l.46)*

Sub-themes for using improper footwear are supported by the following statement:

*“I want to take a walk (P1, l.231), I can take a walk, so I walk without wearing footwear (l.233) then got pricked by a stone (l.235), yes, pavement”(l.237)*

*“It was only a slight lump (P2, l.25) because of this shoes (l.27) it was on the heel (l.31) I don’t feel anything (l.35).. It was there, in 3 months it was spread and then I had it checked (l.37), Then there was pus (l.39).”*

Chronic blood sugar control disorders in DM patients play a role in the incidence of neuropathy and peripheral arterial disease. The supporting theory from Aumiller and Dollahite, 2015 show that the manifestation of the nervous system due to DM is neuropathy that attacks the motor, autonomic and sensory systems. Chronic hyperglycemia causes glycosylation process and produces oxidative stress products in nerve cells causing nerve damage (neuropathy). Damage to the motor system causes an imbalance in the flexion and extension process of the lower extremities, extremity deformity and damage to the skin integrity. Damage to the nervous autonomic system results in impaired functioning of the sweat glands and decrease the ability to moisturize the skin which leads to cracked skin and decreased skin integrity. Neuropathy causes loss of pain sensation in the peripheral area, so patients do not feel any foot injury even if they experience trauma or continuous pressure due to improper use of shoes or footwear.

Sub-theme of exhaustion causes high blood sugar and is prone to injury such as foot ulcers supported by the statement below:

*“It was bumped. it was like...like it was burned by exhaust pipe (P5, l.118). I don’t do anything...it was just sometimes, sometimes it was..the blood sugar was too high(l.120-121) Yes, it can cause it (like it was burned by exhaust pipe).. tired, high blood sugar (l.123-124) Yes, it can get injured by itself. Nothing... was not scratched or anything..its just blisters and watery, like measles.(l.126-128)*

Participant 5 revealed that the current skin injury was the third time experienced after being diagnosed with DM since 2006. Participants revealed that it was easy for the patient to form a wound in the leg area, even though there was no history of trauma or falls. Participants revealed that the foot area was vulnerable to wounds when the physical condition was too

tired or stressed which lead to an increase in blood sugar levels. Due to high blood sugar levels, the skin is very easy to get injured and the healing process extends despite treatment.

The condition of the skin that is susceptible to injury is supported by the results of the study by Okano et al. 2016. His study was in the form of intervention in mice with type 1 DM, hyperglycemia affecting skin integrity. The barrier system in the skin of mice with hyperglycemic conditions has impaired integrity of keratinocytes. Based on these studies, the possible cause of DM patients at risk of damage to skin integrity is due to disruption of keratinocytes from skin cells due to chronic hyperglycemia. Roza, Afriant and Edward, 2015 conducted a study that also aimed to determine the risk factors for diabetic ulcers in DM patients. The study was conducted on 30 DM patients with diabetic ulcer as a control group and 30 DM patients without diabetic ulcer during the period of January-March 2014. The results showed that the factors that influence diabetic ulcer in DM patients were Peripheral Artery Disease (PAD) and trauma. Peripheral Artery Disease causes ischemia in the foot region can also be accompanied by neuropathy; disorders of foot blood flow causing longer healing process; and disruption of oxygenation causes bacteria to live easily in the wound area which ultimately results in diabetic ulcers. The combination of these events causes DM patients to experience a longer healing process of foot injuries than patients without DM.

Theme 2: The expression of feeling with the current condition is various expressions of feelings of the research participants with their current conditions. The supporting sub-themes are: feeling uncomfortable with the illness condition and the ability to adapt to illness conditions. Supporting statements from the sub-themes are:

Sub-themes supporting the feeling of discomfort with illness conditions are expressed by the participants as follows:

*“Tired (P1, l.46). I was here since a month ago. (l.48). Not many people can laugh (l.174), sick people is sad..nothing, you can ask..it is even difficult to sit (l.176-177).*

*“Ye.. just usual, quickly heal, tired (P2,l.225). It was one month already (l.227) Yes, it was like this (l.229). Well, no, I’m not moving places (move the nursing places) (l.231)*

*“Yes, from JemurSari I went to the clinic first, then to the surgery department. Back and forth, I think it was too long...what will my life be?”(P4,l.52)*

The participant above gave an expression of tired with the condition of his illness because of the length of time he was in the hospital to heal his wound. Feelings of fear are expressed by participant 4, because of treatment procedures and moving to various referral places. The fear was expressed by a statement of what the situation would be like for the leg injury.

Sub themes supporting the ability to adapt to illness conditions are expressed by participants as follows:

*“Yes, the condition was normal now. (P5, l.188).*

The ability to adapt to illness conditions was revealed by participant 5, because the pain experienced in his leg at this moment is for the third time. The same illness with his experienced in the past caused him to adapt with the changes in their health status. Wounds will heal if comply with the DM treatment combined with herbs that are considered useful in helping wound healing.

Participants with chronic diseases such as diabetes with pedic ulcer are at risk of experiencing disturbed quality of life. Chronic diseases have slow progression, prolonged treatment and require medical therapy. The impact on participants is the deterioration of health status because the capacity to live healthy and well is limited. Limitations of functional status, productivity and quality of life with illness conditions will have an impact on the treatment cost (Megari, 2013). Prolonged care and increased medical therapy needs are a particular stressor for participants in this study.

Theme 3: The practice of DM treatment carried out is about diet and the benefits of DM treatment and management. This theme is supported by sub-themes understanding DM diet and understanding DM therapy.

Sub theme understanding the DM diet is supported by the following statement:

*“It is forbidden to drink sugary drinks (P1, l.59), It’s only that.. I shouldn’t eat grapes, durian and avocafo (l.87), I’m not allowed to..., I am allowed to eat melon, watermelon and pear only (l.89)”.*

*Have to watch what I’m eating, have to do work out (P5, l.95) I can only eat as much as one saucer only (l.97) It wasn’t like that previously., I was eating one plate before hehehe (l.99) Then I was warned by the professor to watch how I live. Should eat many side dish..(l.101-102) Well the side dish... lot of vegetables, and the fruit is papaya (l.104) Pepaya and what was it...green apple (l.106) Well, it was per...one slice of watermelon only(l.110)*

An understanding of the DM diet is carried out by reducing the amount of rice consumed, sugar intake, avoid fruits such as grapes, durians, avocados, bananas. Fruits with high moisture content are allowed to be consumed such as apples, melons, watermelons, pears. Participants understand about the types of food that are allowed to be consumed based on information from health workers and warnings from doctors whom treating them.

The sub-theme of understanding DM treatment is supported by a statement, namely:

*“Well, what I know is continue the treatment.. if I feel ill, I just go to the doctor” (P2, l.9)*

*“The gliben is once a day, then the metformin is twice a day. (P5,l.66) Gliben was one in the morning, the Metformin at noon.(l.69). Yes, Javanese people said I should drink keres leaves,..(l.73). It was boiled, then dranked, it worked. It can lower the blood sugar, normalize the blood sugar (l.77-78).*

Participants 2 revealed that he would seek treatment at the nearest health center when complaints arose due to Diabetes Mellitus (DM). Complaints that are felt are difficulty sleeping, frequent urination, frequent eating and drinking a lot, and it will bring participants to treat the disease. The therapy management practice carried out by participant 5 was by consuming DM treatment accompanied by herbs such as keres leaves, muris leaves or mahogany wood. Based on the experience of herbal participants, it was beneficial to reduce blood sugar levels and help the healing process of wounds.

Based on the expression of participants' experience, knowledge turned out to affect the compliance of DM patients. Compliance appears as obedient in carrying out life-long treatment therapy and is able to reduce the incidence of complications of DM. Supporting research was carried out by Chavan, et al., 2015 at the Health Service Center in India in 307 participants with type 2 DM with an average age of 55.6 years. The purpose of the study was to determine the relationship between knowledge and compliance in the management of pharmacological and non-pharmacological therapies for DM. The results showed that adherence to pharmacological therapy were influenced by moderate to good knowledge in 88.5% of participants. Compliance with non-pharmacological therapies was influenced by moderate to good knowledge in 87.8% of participants. Based on the research, it is suggested to conduct activities to increase insight and self-awareness of DM patients through seminars, counseling sessions and workshops that are routinely and periodically scheduled.

Theme 4: The description of the role of the nurse with the current condition based on patients' expectation. The supporting sub-themes of this theme are the needs to be understood and accompanied as well as the role of nursing care providers.

Sub needs support themes are understood and accompanied by the following statements:

*"Yes, I just know my condition (P1,l.120). That's it, I just know. People often come to visit (l.151) I'm happy with that (l.154). Just say hi and I'm happy already (l.156)*

Sub needs support themes are understood and accompanied by participant 1. The description of the nurse revealed is someone who has the ability to understand the the patient's condition and caring for, when the patient is needed, and able to greet the patient. Participants expressed enjoyable when the nurse wanted to greet and often visit her and know about her health condition.

Sub themes supporting the role of nursing service providers are obtained through the following statements:

*"I hope they're like the nurses here (P2.l.123) Yes, how they care, they don't get disgusted, not scornful.. (l.128) They should be kind about what they want the patients do. Shouldn't be eating this and that (l.151-152)*

*"Yes, nurses is for caring only."(P5,l.193)*

Participants have an illustration of the role of the nurse as someone who must provide care for the foot wound without feeling disgusted when caring for the patients wound. Participant

2 hopes that in addition to caring for the wound, the nurse is expected to provide support and education about other factors supporting wound healing such as proper diet. The role of nurses with DM competencies is needed in mentoring patients and is expected to be able to play an active role in meeting these needs of promotive, preventive, curative and rehabilitative. Preventive can be done by providing education about diabetic foot, foot care and prevention of trauma to the feet. Curative is carried out by: early detection of changes that may occur such as changes in skin color and sensations, foot care, dressings (wound care). The rehabilitative area is carried out by helping patients when there is foot injury or amputation. The rehabilitative area aims to improve and teach patients to use the right tools so that patient mobility can be maintained (Aalaa, Malazy, Sanjari, Peimani, Mohajeri-Tehrani, 2012)

## **CONCLUSION**

Participants in this study were 5 people, 2 women and 3 men aged around 45-64 years. Identified themes based on the results of interviews with participants are causes of foot ulcers, expressions of feelings with current conditions, DM treatment practices based on the understanding they have, a description of the role of nurses with sick conditions. This theme illustrates the role of nurses expected by DM patients with foot ulcers in mentoring.

Participants all have a picture of the role of nurses as providers of nursing services to treat foot ulcers they experience and assisting them. This description is a form of curative and rehabilitative service that is expected by participants. The conclusion of this study is: the description of the role of nurses with chronic diseases, namely DM with ulcer pedis is in a curative and rehabilitative role. Based on this research, it is necessary to improve the competence of nurses in mentoring patients with chronic diseases in terms of promotive, preventive, curative and rehabilitative.

## **Declarations**

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### **Consent for publication**

I give my consent for this publication

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