



IMPLEMENTATION OF NURSING PROBLEMS WITH IMPAIRED SKIN INTEGRITY IN PATIENTS WITH DIABETES MELLITUS ON THE SDKI AND SIKI : AN EVIDENCE-BASED PRACTICE

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ABSTRACT

Background: tissue integrity disorders are the most common symptoms found and complained about by people with Diabetes Mellitus; this occurs due to macroangiopathy that can trigger vascular insufficiency and nerve damage so that if there is pressure/friction, it is easier to cause open wounds on the surface of the skin. The purpose of this case study is to find out more specifically significant minor signs and symptoms and interventions based on SDKI and SIKI. **Method:** This study is a study that uses descriptive analysis from secondary data from the Case Report of the D3 Nursing Study Program, University of Jember, Lumajang Campus, for the period 2018 – 2021. Univariate data analysis was performed to assess major and minor data and establish diagnoses based on SDKI and SIKI. **Results:** There were a total of 29 Diabetes Mellitus patients. There are major signs of 100% tissue/layer damage to the skin, and two minor signs, namely 79% pain and 72% redness. Eight interventions are often carried out. Namely 100% wound care, 48% health education, collaboration with other medical personnel 41%, infection protection 27%, other activities 20%, and there are additional interventions, namely modern dressing, 27%, and metronidazole compresses 24%. **Conclusion:** Enforcement of nursing diagnoses and interventions of skin/tissue integrity disorders will be easier to do with the support of the results of clinical evidence-based practices related to major and minor signs and the most effective, efficient and successful interventions based on SDKI and SIKI.

Keywords: Diabetes Mellitus; Skin/tissue integrity disorders; SDKI; SIKI

INTRODUCTION

Background

Diabetes mellitus is the disease that is ranked in the top ten with the largest financing. (WHO, 2022) WHO states Diabetes Mellitus type 2 is the most common and has increased drastically in low-income countries and is one of the global health threats. In Indonesia, the prevalence of diabetes in Indonesia increased from 5.7% in 2007 to 6.9%, or around 9.1 million people in 2013. The latest data from the International Diabetes Federation (IDF) Atlas 2017 shows that Indonesia ranks 6th in the world. 10.3 million people with diabetes. If not managed properly, the World Health Organization even estimates that the incidence of diabetes in Indonesia will reach 21.3 million by 2030 (P2PTM Kemenkes RI, 2018).

Diabetes is a chronic metabolic disease in which glucose, which is used for metabolism and cell proliferation, enters the cells more easily, resulting in an imbalance between supply and demand, increasing blood sugar levels (hyperglycemia). When insulin is reduced or absent, glucose is retained in the blood, resulting in spikes in blood sugar and insufficient glucose for cell survival and function. (Derek, Rottie and Vandri, 2017)

Diabetes is a chronic metabolic disease in which glucose, which is used for metabolism and cell proliferation, enters the cells more easily, resulting in an imbalance between supply and demand, increasing blood sugar levels (hyperglycemia). When insulin is reduced or absent, glucose is retained in the blood, resulting in spikes in blood sugar and insufficient glucose for cell survival and function (Rahmasari and Wahyuni, 2019). A diabetic ulcer is a wound that occurs in people with diabetes mellitus due to damage to large and small blood vessels (Fitria *et al.*, 2017). The nature of Diabetes Mellitus disease is incurable and often causes complications in many parts of the body and increases the risk of premature death. About 800,000 diabetics suffer from leg amputations, blindness, nerve damage, kidney failure, stroke, and heart attack (Sasongko *et al.*, 2017). In addition, painful Diabetic Neuropathy (PDN) is a common complication in

skin/tissue integrity disorders that create a large burden due to the clinical, economic/social impacts and treatment required with serious treatment (Galuppo *et al.*, 2014)

Diabetes management consists of five main components, namely nutrition management, exercise, metabolic monitoring, pharmacological therapy, and education (Wahyuningrum *et al.*, 2020). Some of the therapies that are often used in diabetes mellitus patients with nursing problems with skin integrity disorders include those found by the authors of 17 case reports, including; wound care, collaboration with other medical personnel (related to routine treatment that must be consumed, the necessary diet, and the lifestyle that patients must adopt), and the provision of health counseling regarding wounds caused by diabetes mellitus. And there are additional therapies that can support wound healing including; modern dressings (hydrogel, hydrocolloid, Hydrofiber, transparent film, supratulle, silver dressing), and metronidazole compresses.

Research Objectives

The purpose of this study was to determine the symptoms and signs of major, and minor that often appear as well as the main and additional interventions that are often carried out in patients with diabetes mellitus with nursing problems of skin integrity disorders.

RESEARCH METHODS

Types of Research

This study is a study using quantitative methods with instruments in the form of observation sheets in the form of checklists containing signs of major, and minor symptoms, as well as interventions on nursing problems of Skin/tissue Integrity Disorders sourced from SDKI and SIKI 2018. The source of the research data was obtained from secondary data of 29 patients obtained from the Case Report of the D3 Nursing Study Program at the University of Jember, Lumajang Campus for the period 2018 – 2021.

Design

The research design uses an instrument in the form of an observation sheet in the form of a checklist containing major, and minor signs and symptoms, as well as interventions in nursing problems with skin/tissue integrity disorders that are guided in SDKI and SIKI 2018.

Characteristics of Respondents

The characteristics of the respondents selected by the authors in the study were patients aged 35 – 77 years with nursing problems with skin and tissue integrity disorders in patients with diabetes mellitus.

Time

The study was conducted on September 9, 2022, to September 14, 2022

Place

The research was conducted at the D3 Nursing Study Program, Faculty of Nursing, University of Jember, Lumajang Campus.

Instruments used

The instrument that the author uses is to use the checklist on the

observation sheet to determine the percentage of symptoms and signs of major, minor, major interventions, and additional interventions in diabetic ulcer patients with nursing problems and Skin/tissue integrity disorders.

Data retrieval procedure

The data collection procedure is carried out by making an observation sheet with a checklist and rating scale method to find the percentage of data on symptoms and signs of major, and minor that often appear as well as major and additional interventions that are often carried out in patients with diabetic ulcers with nursing problems with skin and tissue integrity disorders. Where the results obtained from the observation sheet will later be summarized back into tables and diagrams to get conclusions from the data obtained.

RESULTS OF RESEARCH AND DISCUSSION

Result

Table 1 Signs and Symptoms of Major Skin Integrity Disorders 29 Patients with Diabetic Ulcer wounds

No	Major	Frequency	Percentage
1.	Damage to tissues and//layers of the skin	29	100%

Table 1 can be seen that from 29 secondary data, 29 patients experienced major symptoms and signs of tissue and/skin layer damage (100%).

Table 2 Signs and Symptoms of Minor Skin Integrity Disorders 29 Patients with Diabetic Ulcer wounds

No	Minor	Frequency	Persentase
1.	Pain	23	79%
2.	Redness	21	72%
3.	Bleeding	10	34%
4.	Hematomas	4	13%

Table 2 can be seen that from 29 secondary data, patients who experienced signs and symptoms of minor pain were 23 patients (79%), redness as many as 21 patients (72%), bleeding as many as 10 patients (34%), and hematomas as many as 4 patients (13%).

Table 3 Key Interventions for Skin Integrity Disorders 29 Patients with

Diabetic Ulcer wounds

no_	Wound Care	Frequen cy	Percenta ge
1.	Observation		
	Monitor wound characteristics (eg. Drainage, color, size, smell)	29	100%
	Monitor for signs of infection	29	100%
	Remove the dressing and plaster slowly	29	100%
2.	Therapeutic		
	Shave hair in the wound area if necessary	0	0%
	Clean with NaCl liquid or nontoxic cleaner, as needed	24	82%
	Clean necrotic tissue	16	55%
	Apply the appropriate ointment on the skin or lesions, if necessary	3	10%
	Install dressing according to the type of wound	29	100%
	Maintain sterile techniques when treating wounds	29	100%
	Change dressing according to the amount of exudate	29	100%

		and drainage Schedule a change of position every 2 hours or according to the patient's condition	4	13%
		Provide a diet with calories of 30-35 kcal/kgBB/day and protein 1.25-1.5 g/kgBB/day	29	100%
		Give vitamin and mineral supplements (e.g. vitamin A, vitamin C, Zinc, Amino acids), as indicated	12	41%
		Give TENS therapy (Transcutaneous nerve stimulation), if possible	0	0%
		Provide TENS (Transcutaneous nerve stimulation), if necessary		
		Describe the signs and symptoms of infection	29	100%
3.	Education	Recommend eating foods high in potassium and protein	14	48%
		Teach the wound care procedure independently	14	48%
		Collaboration of debridement procedures (ex: enzymatic biological mechanical, autolytic), if necessary	12	41%
4.	Collaboration	Collaboration on antibiotic administration, if necessary	12	41%

Table 3 can show that out of 19 wound care interventions, there were 8 interventions that had been fulfilled by 29 patients, 9 interventions that were still not met to the maximum, and 2 interventions that were not carried out at all.

Discussion

Based on table 1, it can be known if the objective major symptoms of skin/tissue integrity disorders according to the DPP PPNI (PPNI, 2017) consists of one component, namely damage to the tissue/layer of the skin. the results of the secondary data showed that one sign of major symptoms became the most frequent data in 29 patients with a percentage of 100%. According to the author's

assumptions, this has become a typical symptom of skin/tissue integrity disorders, and this is in line with the theory (Wijaya and Putri, 2013) which states that wounds in Diabetes Mellitus patients will tend to take a long healing process because an increase in blood sugar or hyperglycemia causes blood circulation to be disturbed and this results in a narrowing of the microvascular blood vessels. This circulatory disorder causes abnormal blood flow, so autonomic neuropathy causes dry skin and anhydrosis, which easily damages the skin and causes gangrene.

From the data in table 2, it can be seen that the objective minor symptoms of skin/tissue integrity disorders according to the DPP PPNI (PPNI, 2017) consists of four components; Pain, Bleeding, Redness, and Hematomas. And a minor symptom that often appears in patients with diabetes mellitus with nursing problems with skin/tissue integrity disorders is Pain with a percentage of 79% in 23 patients out of 29 patients. This is supported by the theory of (Nurarif and Kusuma, 2015) that the signs of infection include pain, inflamed areas that tend to be very painful to the touch, redness due to capillaries filled with more blood than usual, immobility, and movement, loss of some function, swelling, etc. It comes from fluid retention and an increase in body temperature (fever). And the least common minor symptom is a hematoma with a percentage of 13%, 4 out of 29 patients who have a hematoma in the ulcer wound of diabetes mellitus. Based on the author's opinion about hematomas in the ulcer area, caused by pressure or trauma or a fairly hard impact on the area around the wound which results in the rupture of blood vessels under the skin so that hematomas arise in the area around the diabetic ulcer.

According to DPP PPNI Indonesian Nursing Intervention Standards (PPNI, 2018) on Nursing Issues Skin/Tissue Integrity Disorders, of the two main Interventions, namely, Skin Integrity Care and Wound Care, the intervention that is often done is Wound Care. Based on table 3, it is known that

the interventions that are often carried out are 8 interventions consisting of monitoring wound characteristics (eg. Drainage, color, size, and smell), monitoring signs of infection, removing dressings and plasters slowly, installing dressings according to the type of wound, maintain sterile techniques when treating wounds, change dressings according to the amount of exudate and drainage, provide a diet with calories of 30-35 kcal / kgBB / day and protein 1.25-1.5 g / kgBB / day and explain the signs and symptoms of infection. The eight interventions are often carried out because they are related to major signs and symptoms, and minor skin/tissue integrity disorders in patients with diabetes mellitus. This is supported by the theory (Aprilani, 2018) that wound care can provide moisture to the wound area so that it can speed up the wound reparatory process, the autolysis, and the granulation process. Therefore, in the wound treatment process, proper dressing is needed to maintain its moisture to the prevention of cross-infection (entering through the wound).

In the author's opinion, the provision of health counseling regarding wound care, and the regulation of the diet of diabetes mellitus patients is also very important as already cited by (Alfiani, Yulifah and Sutriningsih, 2017) in (Latifah, Herdiansyah and Nasyithoh, 2020) and theories of (Amilia *et al.*, 2018) that there is a relationship between knowledge level and lifestyle that can also determine the health level of diabetes mellitus patients. Where if the respondent still lacks knowledge about what Diabetes Mellitus is as well as the management of diabetes treatment itself, then the respondent will directly no longer maintain a diet such as maintaining glucose levels in their blood so that neuropathy arises and diabetic ulcers arise for those who have just realized that the wounds are also getting worse for those who have had diabetic ulcers for a long time. So it can be concluded that, in addition to routinely treating wounds in diabetic ulcers, the role of nurses in providing health education including diets that must be done or controlling glucose levels in the blood is very important in the healing process of diabetic ulcer

wounds, both to families and patients suffering from these wounds.

Conclusion

Nursing diagnosis of skin/tissue integrity disorders can be determined more quickly by knowing the limitations of the most dominant characteristics, namely looking at damage to the tissue/skin layer, pain felt by the patient, and the appearance of redness in the wound area. Improving patient wound healing can be done with the right intervention, namely wound care, both with the help of medical personnel and independently.

Suggestion

When conducting the study, nurse practitioners and academics are required to carry out the nursing process effectively and efficiently, therefore this research is to be used as a reference in finding the limitations of nursing characteristics and interventions in diabetes mellitus patients with skin integrity disorders.

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