

## **Nursing Care of Diabetes Mellitus with Infection Risk Nursing Problems**

**Damon Wicaksi<sup>1\*</sup>, Leni Agustin<sup>2</sup>, Ahmad Maulana Haqiqi<sup>3</sup>**

<sup>1,2,3</sup>*Diploma Nursing Study Program, Bondowoso University, Bondowoso, Indonesia*  
*\*Corresponding Author: damonwicaksi75@gmail.com*

### **ABSTRACT**

**Introduction:** Diabetes Mellitus is a progressive chronic metabolic disease. The dangers of Diabetes Mellitus are very great and can allow kidney failure, blindness, and many other complications that can cause death. If not handled properly, it will cause various problems, one of which is the risk of infection.

**Method:** The design used is a case study with clients who experience Diabetes Mellitus with infection risk nursing problems at Dr. H. Koesnadi General Hospital Bondowoso in 2023. Data collection was carried out on 15-18 May 2023 used is interview, observation and physical examination, documentation studies and nursing care form.

**Result:** From the results of the researcher's assessment, not all data obtained from clients can be found according to theory, because it is adjusted from the condition and condition of the client, the diagnosis is in accordance with the theory and results, nursing interventions in principle according to theory, implementation in principle according to theory, evaluation of problems can be resolved in accordance with specific objectives and outcome criteria.

**Conclusion:** It is hoped that clients will always maintain their diet to reduce the risk of hyperglycemia and maintain wound care to avoid the risk of infection.

**Keywords:** *Diabetes Mellitus, Infection Risk, Nursing Problem*

## Introduction

Diabetes Mellitus is a progressive chronic metabolic disease. The danger of Diabetes Mellitus is very large and can allow kidney failure, blindness, and many other complications that can cause death. Diabetes Mellitus is still widely experienced by the community because of the unhealthy lifestyle of the community and too much consumption of foods that contain high glucose, this is influenced by low knowledge factors, minimal education levels, bad habits and difficult to change.

According to WHO (*World Health Organization*) in 2021, the incidence of Diabetes Mellitus continues to increase from year to year around 537 million. In this 10th edition of the IDF Diabetes Atlas diabetes mellitus is almost 90% of people with undiagnosed diabetes live in low- and middle-income countries. Indonesia ranks 5th of all countries in the world with the number of sufferers reaching 19.5 million people.

Diabetes mellitus is a disease that can cause organ damage, such as damage to the kidneys, eyes, heart, and extremities and can cause death. the occurrence of chronic kidney failure, diabetic ulcers. Diabetes mellitus is a state of chronic hyperglycemia accompanied by various metabolic disorders due to hormonal disorders that cause chronic complications in the eyes, kidneys, nerves. The increasing number of people with diabetes mellitus can be caused by many factors, including type 1 diabetes mellitus, namely genetic factors, patients do not inherit a predisposition or genetic tendency towards type 1 diabetes, immunological factors (autoimmune), environmental factors consisting of viruses or toxins, type 2 diabetes mellitus, namely age, obesity, history. Symptoms of diabetes mellitus can vary slowly so that patients do not realize the changes such as drinking more, urinating more often, being hungry easily, and weight loss.

From the above pathophysiology, if the problem is not addressed or not treated, new problems will arise such as imbalance of glucose levels and nutritional deficits, this causes the nursing problem of infection risk. Instability of blood glucose levels is a variation in blood glucose levels up and down from the normal range of causes of hyperglycemia such as pancreatic dysfunction, insulin restention, impaired blood glucose tolerance, impaired fasting blood glucose and hypoglycemia such as the use of insulin or oral glycemic drugs, hyperinsulinemia, liver dysfunction, renal dysfunction, the effects of pharmacological agents, neo plasma surgery, congenital metabolic

disorders (eg, lysosomal storage disorders galactosemia, glycogen storage disorders). Nutritional deficit is the intake of nutrients insufficient to meet metabolic needs, causes such as inability to swallow food, inability to digest food, inability to absorb nutrients, increased metabolic needs, economic factors (e.g. financial, insufficient), psychological factors (e.g. stress, aversion to food). This can lead to problems such as infection risk, infection risk is an increased risk of being attacked by pathogenic organisms, risk factors such as chronic diseases (e.g. diabetes mellitus), the effects of invasive procedures, malnutrition, increased exposure to environmental pathogenic organisms, primary defence inadequacy, (impaired peristalsis, deterioration of skin integrity, altered PH secretion, decreased ciliary work, prolonged rupture of membranes, smoking, static body fluids), secondary defense inadequacy, (decreased hemoglobin, immunosuppression, leucopenia, suppression of inflammatory response, inadequate vaccination).

From these problems, there is a problem solving of the diabetes mellitus case with the criteria for the results obtained based on SLKI (Indonesian Nursing Output Standards) as follows: Stability of blood glucose levels, drowsiness with a score of 5 (decreased), dizziness with a score of 5 (decreased), fatigue with a score of 5 (decreased), sweating with a score of 5 (decreased), blood glucose levels with a score of 5 (improved). Nutritional status, portion of food spent with a score of 5 (improved), knowledge of healthy food with a score of 5 (improved), body mass index weight with a score of 5 (improved), meal frequency with a score of 5 (improved), appetite with a score of 5 (improved), Risk of infection, Body hygiene with a score of 5 (improved), appetite eating with a score of 5 (improved), fever with a score of 5 (decreased), pain with a score of 5 (decreased), white blood cell levels with a score of 5 (improved).

Based on SIKI (Indonesian Nursing Intervention Standards) efforts that can be made diabetes mellitus with instability in blood glucose levels with hyperglycemia management, Identify possible causes of hyperglycemia, monitor blood glucose levels, monitor signs and symptoms of hyperglycemia, provide oral fluid intake, recommend avoiding exercise when sugar level is more than 250 mg/dl, recommend adherence to diet and exercise, teach diabetes management, collaborate insulin administration if necessary, collaborate IV fluid administration, if necessary, Nutritional management, identify nutritional status, identify food allergies and intolerances monitor body weight,

provide high fiber foods to prevent constipation, teach programmed diet, collaborate on medication administration before meals, collaborate with dietician on calorie counts and types of nutrients needed, if necessary, Immunization/vaccination management, monitor signs and symptoms of local and systematic infections, limit the number of visitors, provide skin care on edematous areas, wash hands before and after contact with patients and patient environment, maintain aseptic technique in high risk patients, explain signs and symptoms of infection, teach how to wash hands properly, collaborate on immunization administration if necessary.

Based on the above phenomenon, the authors are interested in conducting nursing care case management on Mrs.S who has diabetes mellitus with the nursing problem of Infection Risk at Dr. H. Koesnadi Hospital, Bondowoso in 2023.

## **Method**

This research is a case study that explores a phenomenon intensively with detailed boundaries and has in-depth data collection with various information to obtain a clear picture of a subject unit (Nursalam, 2016). Case studies are limited by time and place, with the focus of research being activity events in individuals within the range of 24 hour nursing care. In this study, a case study was conducted by exploring the problem with Mrs. S who has Diabetes Mellitus with Infection Risk Nursing Problems in the Bougenville Room at Dr. H. Koesnadi General Hospital, Bondowoso in 2023. The inclusion criteria in this study were clients who met the criteria: 1) Clients diagnosed with Diabetus Mellitus; 2) Clients experiencing infection risk; 3) Signed informed consent.

The target population in this study is a client named Mrs. S, who is female, 38 years old in the internal room (Bougenville) General Hospital Dr. H. Koesnadi Bondowoso. This research was conducted in the internal room, Bougenville General Hospital Dr. H. Koesnadi Bondowoso from 15 May – 18 May 2023. The data collection methods used were interviews, observations, physical examinations and documentation studies and questionnaires. Interviews were conducted with clients, families and nurses with the results of data in the form of client identity, main complaints, history of current illness, past medical history, family history of disease and, patterns of health function. Observation and physical examination are carried out by inspection, palpation,

percussion and auscultation of the client's body systems. Document and questionnaire studies are carried out by examining client data from medical records.

The basis of ethics in the preparation of case studies is the consent to become a client (informed consent) of the respondents who will be studied and meet the inclusion and exclusion criteria. The writing of research subjects is listed anonymously. Basic Confidentiality (secrecy), namely the detailed data obtained in this study to be kept secret. In this study, researchers carried out an ethical test on April 27, 2023 which was carried out at the Health Research Ethics Commission, Faculty of Health Sciences, Muhammadiyah University Jember with number 0198/KEPK/FIKES/XII/2023

## **Result**

### **Results of the assessment**

Based on the results of the assessment obtained, the nursing problem that can be enforced in this case is Infection Risk. The researcher will describe the results of the research based on the stages of the nursing process.

Data from the assessment results show subjective data: Clients say they are had a weak body, a history of current illness, high blood glucose and a lump on the head that was pus. From the objective data, the results are: The client looks weak and pale, TTV (blood pressure: 114/82 mmHg, RR: 26 x/minute, N: 100 x/minute, S: 37.6 °C).

Based on the analysis of the data obtained, a nursing diagnosis of Infection Risk can be enforced related to Weakness which is characterized by the client looking weak, leukocytes: 140000 u/l, blood glucose: 284 mg/dl.

Nursing interventions for infection risk problems are after nursing actions are carried out for 3 times 24 hours. The problem was resolved with the results obtained, namely the client said he felt more comfortable after being given wound care and and maintain aseptic technique on wounds. Nursing actions given to Mrs. S on May 15 – May 18 2023 carried out according to the intervention plan that has been made. Until based on the evaluation results during the 4 interventions, the results of the infection risk nursing problem could be resolved because it was in accordance with the outcome criteria.

### **Nursing Diagnosis**

The nursing diagnosis raised by the author is the risk of infection which is partially appropriate. With the reason referring to the assessment, namely subjective data: The client said he did not know how to prevent infection and health improvement efforts against Diabetes Mellitus disease, did not know the consequences if not treated immediately where in the cause of nursing care from Diabetes Mellitus, namely Infection Risk.

Based on Infection Risk theory the definition of being at risk of increased pathogenic organism or Diabetes Mellitus, Effects of invasive procedures, Malnutrition, Increased exposure to environmental pathogens, Inadequate primary body defenses, Inadequate secondary body defenses. Chronic obstructive pulmonary disease, Diabetes mellitus, Invasive measures, Conditions using steroid therapy, Drug abuse, Premature rupture of membranes, Cancer, AIDS, Renal failure, Immunosuppression, Lymphedema, Leukocytopenia, Impaired liver function (SDKI, 2017).

According to the researcher's opinion, based on subjective and objective data on Mrs.S assessment with Infection Risk nursing problems in accordance with the theory, so researchers raised the Infection Risk nursing problem.

### **Nursing Intervention**

The author takes nursing interventions based on theory. Nursing planning refers to the SIKI (Indonesian Nursing Intervention Standards) book, the outcome criteria to be achieved in nursing care for Diabetes Mellitus clients with Infection Risk, namely: Infection rate: Hygiene Hand hygiene increased (5), Body hygiene increased (5), Fever decreased (5), Redness decreased (5), Pain decreased (5), Swelling decreased (5), Foul smelling liquid decreased (5), Green sputum decreased (5).

According to the opinion of the intervention researcher taken by the researcher on Mrs. S with the SIKI theory (Indonesian Nursing Intervention Standards) : Infection Prevention: **Observation:** Monitor signs and symptoms of local and systematic infections. **Therapeutic:** Provide skin care to the edema area, Wash hands before and after contact with the patient and the patient's environment, Maintain aseptic technique in high risk patients. **Education:** Explain the signs and symptoms of infection, Teach how to wash hands properly, Teach how to check the condition of wounds or surgical wounds. **Collaboration:** Collaboration on immunization, if necessary Build a

trusting relationship with the family and client. Introduce yourself and explain the purpose of nurses doing nursing care for 4 days of visits to families and clients. Conduct an assessment of the family and client. Assess the client's knowledge about the disease experienced. Assess the family's level of knowledge about how to prevent infection risks. Assess family and client knowledge about the causes and signs and symptoms of Diabetes Mellitus. Check vital signs. Assess the diet and type of food currently consumed. Contracted the next meeting time with the family and client. Motivate the development of attitudes and emotions that support health efforts.

So according to the author, it is confirmed that in principle between the existing theory and the real case in planning nursing care in Diabetes Mellitus cases with Infection Risk there is no difference. Assess the client's knowledge about the disease experienced.

In the researcher's opinion, the nursing diagnosis taken by the researcher is Infection Risk which is in accordance with the theory. The interventions taken have referred to the SIKI theory, then the researcher tries to add 9 additional interventions, these interventions because there is the same implementation and adjusts the situation of the client. The fact that Mrs. S often underestimated her illness and the client lacked knowledge about the disease Infection Risk

### **Nursing Implementation**

The implementation applied to Mrs.S clients is in accordance with existing interventions. The implementation refers to SIKI (Indonesian Nursing Intervention Standards) interventions that have been adapted to the client's circumstances and make it easier to carry out the nursing care process and bring closer the relationship of mutual trust between the client and the researcher. Implementation is the stage of implementing the nursing action plan that has been set for the nurse and the client. Implementation is carried out in accordance with the planned interventions (SIKI, 2018).

According to the opinion of the researchers, the implementation of the first meeting until the third meeting went according to the intervention that made Mrs. S is the wound dries up and is starting to almost close and no longer produces pus, the swelling has reduced and the redness has begun to fade.

### **Nursing Evaluation**

At the first evaluation meeting on May 15, 2023 the problem had not been resolved, of all the implementations the researcher took seven implementations and was carried out on Mrs.S on the first day of the evaluation results as follows Subjective: The client does not understand the education provided Objective: General condition: Good BP: 114/82 mmHg N: 128x/min RR: 26 x/min S: 36.6°C.

At the last evaluation of the fourth day on May 18, 2023 the problem was resolved, of all the implementations the researcher took seven implementations and was carried out on Mrs.S on the third day of the evaluation results as follows Subjective: Clients can practice the education provided Objective: General condition: good BP: 95/67mmHg N: 107 x/min RR: 20 x/min S: 37.4°C.

Evaluation is the last step of the nursing process by identifying the extent to which the goals of the nursing plan have been achieved or not. evaluation of the overall action to assess the success of the actions taken and describe progress in achieving the predetermined goals. This evaluation usually uses the "SOAP" format. The purpose of the evaluation is to get back nursing plan feedback, value and improve the quality of nursing care through the results of a comparison of predetermined standards.

According to the author's opinion, the nursing problem of Infection Risk in Mrs.S can be resolved, because during the treatment Mrs.S can follow the recommendations and is always cooperative and refers to the 2 outcome criteria in the planning has been achieved entirely after nursing action for 4 days.

## **Discussion**

Diabetes mellitus is a group of metabolic disorders characterized by elevated blood glucose levels (hyperglycemia) due to defects in insulin secretion, insulin action, or both. Lifestyle factors, such as physical inactivity, stress, and consumption of high-sugar foods, play an important role in the development of this disease. In addition, genetic factors and obesity that are not treated properly, are quite influential in increasing the risk of type 2 diabetes .

Lifestyle factors, such as physical inactivity, stress, and consumption of high-sugar foods, play an important role in the development of diabetes. In addition, genetic factors and untreated obesity play a role in increasing the risk of type 2 diabetes.



For women, the study estimates that diabetics can live up to 67-80 years old and 65-75 years old for men. The estimated average lifespan for people with type 2 diabetes was also found in a previous study in the *European Heart Journal*.

## Conclusion

The results of this study concluded that the respondent Mrs. S with a diagnosis of Diabetes Mellitus has emerged a nursing problem of Infection Risk. In carrying out the implementation it has been carried out in accordance with the intervention and the client's condition with the result that the problem can be resolved in accordance with the specific objectives and outcome criteria.

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