
Nursing Care for Mrs. S Who Experienced Diabetes Mellitus with Nutrition Deficit Problems in the Bougainville Room of the Dr. Koesnadi Bondowoso General Hospital

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ABSTRACT

Background: Diabetes Mellitus is a chronic disease characterized by the body's inability to metabolize carbohydrates, fats and proteins which causes hyperglycemia (high blood glucose levels). Patients with Diabetes Mellitus will experience changes in appetite and experience weight loss.

Method: This study uses a case study research design with clients experiencing diabetes mellitus with nutritional deficit problems in the Bougainville room of the Dr. H. Koesnadi Bondowoso General Hospital, starting from May 15, 2023 to May 17, 2023, data collection in the form of interviews, observations, physical examinations, documentation studies and questionnaires.

Results: The results of this study were obtained from research, namely nutritional deficits in accordance with theory, diagnoses in accordance with the theoretical review. In nursing interventions in accordance with the circumstances experienced by the client, while implementation refers to predetermined interventions and evaluation refers to predetermined outcome criteria in accordance with theory and the final evaluation of calories met is rice (735 kcal) and 1 glass of milk (260 kcal).

Conclusion: Nutritional deficits are insufficient nutritional intake to meet metabolic needs. The purpose of writing is to provide nursing care to clients who experience diabetes mellitus with nutritional deficit problems.

Keywords : *Nutritional Deficit; Diabetes Mellitus*

Introduction

Non-communicable diseases are the leading cause of death globally. One type of non-communicable disease that always increases from year to year is diabetes mellitus (Meidikayanti & Wahyuni, 2017). Diabetes mellitus is one of the non-communicable diseases. This disease is included in carbohydrate metabolism disorders that affect all systems in the patient's body. Metabolic disorders in diabetes mellitus are caused by insulin secretion, the action of insulin or both (Ministry of Health, 2020). Diabetes mellitus is a chronic disease characterized by the body's inability to metabolize carbohydrates, fats and proteins leading to hyperglycemia (high blood glucose levels). Diabetes mellitus is sometimes referred to as a "sugar high" by both clients and healthcare providers. The rationale for the association of sugar with diabetes mellitus is that due to the large amount of sugar in urine, high levels of blood glucose are only one component of the pathological process and clinical manifestations associated with diabetes mellitus (Joyce, 2020).

Diabetes mellitus is called the silent killer because this disease can affect all organs of the body and cause various complaints. Diabetes mellitus that lasts for a long time can cause various complications such as macrovascular complications (heart disease, stroke and peripheral vascular disease), microvascular complications (retinopathy and nephropathy), and neuropathy (Type 2 Diabetes Mellitus Guidebook, 2010). Diabetes mellitus is a chronic disease that will increase protein turnover and loss. The state of hyperglycemia and negative nitrogen draw makes patients with diabetes mellitus vulnerable to malnutrition and infection. So patients with diabetes mellitus need medical nutrition therapy with the aim of achieving and maintaining blood glucose levels within normal or near normal limits, lipid profiles and pressure within normal ranges, preventing or slowing down chronic complications, meeting nutritional needs and limiting food choices (Oh, et al, 2014).

In 2021, the International Diabetes Federation (IDF) recorded 537 million adults (aged 20-79 years) or 1 in 10 people living with diabetes mellitus worldwide. Diabetes also causes 6.7 million deaths or 1 every 5 seconds. Indonesia is in the 5th position with 19.47 million people with diabetes. With a population of 179.72 million, the prevalence of diabetes in Indonesia is 10.6%. The number of people with diabetes mellitus in East Java per 6 years has increased starting from 2007-2019, in 2007 the number of people with diabetes mellitus was 275,462, in 2013 it was 605,974 and the highest number of increases in 2019 was 841,971. Data collected by the Bondowoso District Health Office, during January to December 2022 a total of 14,273 patients consisting of 9500 women and 4,773 men (Bondowoso District Health Office, 2022).

Medical and dietary nutrition therapy in people with diabetes mellitus is an important part of the comprehensive management of type 2 diabetes mellitus. The key to its success is the involvement of the whole team (doctors, nutritionists, other health workers as well as patients and their families). In order to achieve the goals of medical nutrition therapy should be given according to the needs of each person with diabetes mellitus. The principle of eating arrangements in people with diabetes mellitus is almost the same as eating recommendations for the general public, namely a balanced diet and according to the calorie and nutrient needs of each individual (PERKENI, 2015).

Diabetes mellitus can cause both medical and nursing problems. In nursing problems, diabetes mellitus can cause nursing problems, one of which is nutritional deficits. Nutritional deficit is insufficient nutritional intake to meet metabolic needs. So it is necessary to provide nursing care in accordance with the guidelines. Based on the Indonesian Nursing Outcome Standards, the outcome criteria to be achieved in nursing care for clients with diabetes mellitus with nutritional deficit nursing problems are: Nutrition Status; 1) portion of food spent (5) increased, 2) feeling of fullness (5) decreased, 3) body weight (5) improved, 4) appetite (5) improved, and 5) mucous membranes (5) improved.

Based on the Indonesian Nursing Intervention Standards theory, efforts can be made to overcome diabetes mellitus with nutritional deficit nursing problems, namely Observational Nutrition Management: identify nutritional status, identify calorie needs and types of nutrients, monitor food intake, monitor body weight. Therapeutic: facilitate determining dietary guidelines. Education: Teach the programmed diet, encourage eating little but often. Collaboration: collaboration with a nutritionist to determine the number of calories and types of nutrients needed. The general objective in this study was to carry out nursing care for Mrs. S who had Diabetes mellitus with the nursing problem of nutritional deficits in the Bougenvil room of Dr. H. Koesnadi Hospital, Bondowoso Regency in 2023.

Method

Research Design

This research is case study research, which is a study that explores a problem or phenomenon in detail, has in-depth data collection and includes a variety of information. Case studies are limited in time and place, and cases are studied in the form of individual activity events. This case study, is a study to explore the problem of "nursing care for Mrs. S who has diabetes mellitus with nutritional

deficit problems in the Bougenvil Room of Dr. H. Koesnadi Bondowoso General Hospital". The inclusion criteria in this study were clients who met the criteria: 1) Clients suffering from diabetes mellitus; 2) Weight Loss 10% of the ideal range; 3) Female; 4) Experiencing nutritional deficit nursing problems; 5) Willing to be a participant and sign informed consent.

Research Population

The target population in this study was Mrs. S, female gender, 43 years old in the Bougenvil Room of Dr. H. Koesnadi Bondowoso General Hospital.

Place and Time of Research

This study was conducted in the Bougainvillea Room of Dr. H. Koesnadi Bondowoso General Hospital in 2023 for 3 days from May 15 - May 17, 2023.

Data Collection

The data collection methods used include: 1) Interviews (the results of the interview contain the client's identity, main complaints, history of current illness, previous illnesses, family illnesses and others) data sources obtained from clients, families and nurses; 2) Observation and physical examination (with the approach of inspection palpation percussion and auscultation) on the client's body; 3) Document study and questionnaire (the results of the examination of relevant client data).

Research Ethics

This research has been ethically tested at the Health Research Ethics Commission of the Faculty of Health, Muhammadiyah University of Jember with number NO. 0193/KEPK/FIKES/XII/2023.

Results

Results of the assessment

Date/Hours	Data	Etiology`	Problem
May 15, 2023 17.00	<p>Subjective Data:</p> <ol style="list-style-type: none"> The client said his weight decreased dramatically from 60 kg to 37 kg The client said his appetite was reduced to eating only 2 spoons of porridge because of nausea <p>Objective Data : Anthropometry =</p> <ol style="list-style-type: none"> Weight : 37 kg 	<p>Insulin deficiency</p> <p>↓</p> <p>Glucose increases</p> <p>↓</p> <p>Gluconeogenesis</p>	Nutritional Deficit (D.0019)

<p>2. Height : 150 cm</p> <p>3. Upper Arm Circumference: 22 cm</p> <p>4. Ideal Weight: $(TB-100) - ((TB)-100)) \times 15\%$ $(150\text{ cm}-100)-((150\text{cm})-100)) \times 15\%$ $= 42,5\text{ kg}$</p> <p>5. Basal Metabolit Rate : $655,1 + (9,563 \times BB) + (1,850 \times TB) - (4,676 \times \text{usia})$ $: 655,1 + (9,563 \times 37\text{ Kg}) + (1,850 \times 150\text{ cm}) - (4,676 \times 38\text{ year})$ $= 1.108,64\text{ kkal}$</p> <p>6. Input : infusion:1000cc :625 kkal; milk : 500cc :520 kkal = 1.145 kkal</p> <p>7. Output : Basal Metabolit Rate x AF (badrest) $: 1.108,64 \times 1,3$ $: 1.441,23\text{ kkal}$</p> <p>8. Balance nutrition : input-output $: 1.145 - 1.441,23$ $: -296,23\text{ kkal}$</p> <p>balance nutriti : minus ocemichal</p> <p>1. Random Blood Sugar: 250 mg/dl</p> <p>2. Haemoglobin : 11,3 g/dl</p> <p>3.</p> <p>Clinical</p> <p>1. Body weakness</p> <p>2. pallor</p> <p>3. dry mucosa</p> <p>Diet</p> <p>strained food (porridge)</p> <p>Energy: 1,800 kcal</p> <p>Protein : 41 grams</p> <p>Fat : 33 grams</p> <p>Carbohydrates: 159 grams</p> <p>Vital Signs = Blood Pressure: 114/82 mmHg</p> <p>Temperature: 36,6°C</p> <p>Respiration Rate : 22 x/min</p> <p>Pulse: 128 x/min</p> <p>Spo2: 99 %</p>	<p>↓</p> <p>Fat</p> <p>↓</p> <p>Ketogenesis</p> <p>↓</p> <p>Ketonemia</p> <p>↓</p> <p>PH decreases</p> <p>↓</p> <p>Nausea vomiting</p> <p>↓</p> <p>Nutritional deficit</p>
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Nursing Diagnose

The nursing diagnosis raised by the researcher is a nutritional deficit.

Nursing Intervention

Nursing planning refers to the Indonesian Nursing Intervention Standards book, namely nutritional management: Observation: identify nutritional status, identify calorie needs and types, monitor food intake, monitor body weight. Therapeutic: facilitate determining dietary guidelines. Education: teach

the programmed diet, recommend eating little but often. Collaboration: collaboration with nutritionists to determine the number of calories and types of nutrients needed. The expected outcome criteria of interventions in nutritional deficit nursing care are nutritional status (L.03030): 1) portion of food spent; 2) feeling of fullness (5) decreased; 3) appetite (5) improved; 4) mucous membrane improved (PPNI, 2018).

Nursing Implementation

Identify nutritional status using the parameters of Anthropometry, Biochemical, clinical signs and Diet required. The response obtained: the client's nutritional status is Anthropometry = Body Weight : 37 kg, Height: 150 cm, Upper Arm Circumference: 22 cm, Biochemical = Random Blood Sugar: 250 mg/dl, Haemoglobin: 11.3 g/dl, Clinical = body weak and pale, mucosa dry, appear nauseous, Diet = filter food (porridge), Energy: 1,800 kcal, Protein : 41 grams: 33 grams: 159 grams. The second implementation is to identify calorie and nutrient needs. The response obtained is the calories and nutrients needed, namely: Energy: 1,800 kcal Protein: 41 grams, Fat: 33 grams, Carbohydrate: 159 grams. The third implementation is monitoring food intake. Response: the client's appetite decreased and only consumed 2 scoops of porridge (104 kcal) and 1 glass of milk (260 kcal). The fourth implementation monitors body weight. Response: The client's weight before the illness was 60 kg but during the illness decreased to 37 kg. The next implementation facilitates determining dietary guidelines.

The response obtained is that the client gets a diet of filter food (porridge) and 1 glass of milk. The last implementation was to teach the programmed diet. Response: the client could eat but was a little nauseous and only finished 2 spoons of porridge (104 kcal) and 1 glass of milk (260 kcal) because there was an OGT tube that was blocking. recommend eating little but often. Expected response: the client has eaten little but often, but the client is nauseous and can only finish 2 spoons of porridge (104 kcal) and 1 glass of milk (260 kcal) because there is an OGT tube that is stuck. collaborate with a nutritionist to determine the number of calories and the type of nutrients needed (Low Calorie and Low Sugar). Response: the client received a diet: filter food (porridge), Energy: 1,800 kcal, Protein: 41 grams, Fat: 33 grams Carbohydrate: 159 grams.

Evaluation

Evaluation results until the third day showed that the client said his appetite had improved and spent 1 serving of rice (735 kcal) and 1 glass of milk (260 kcal). This was shown by objective data including: 1) Good general condition; 2) The body looks fresh; 3) The mucosa is moist; 4) The client

does not look pale and nauseous anymore; 5) Portion of food spent (5) increased; 6) Feeling of fullness (5) decreased; 7) Appetite improved; 8) Mucous membranes (5) improved; 9) GDA: 210 mg/dl; 10) Vital Signs, Blood Pressure: 110/82 mmHg, S: 36.6°C, Respiration Rate: 20 x/min, Pulse: 106x/min, Spo2: 99 %. In this case the problem is resolved and the intervention is stopped.

Discussion

Nutritional deficits according to the Indonesian Nursing Diagnosis Standards are insufficient nutritional intake to meet metabolic needs. The causes of nutritional deficits in SDKI (Indonesian Nursing Diagnosis Standards) are the inability to swallow food, the inability to digest food, the inability to absorb food, increased metabolic needs, economic factors (e.g. financially poor) and psychological factors (e.g. stress, unwillingness to eat). objective major symptoms and signs of nutritional deficits in SDKI (Indonesian Nursing Diagnosis Standards) are weight loss of at least 10% below the ideal range (PPNI, 2017).

Major objective data on the assessment found that the patient experienced a weight loss of > 10%, from 60 kg to 37 kg. Nutritional deficit is the insufficient intake of nutrients in meeting daily energy needs due to inadequate food intake or due to impaired digestion and absorption of food (Barbara et al, 2011). Nutritional deficit is a condition experienced by a person in a non-fasting (normal) state or weight loss due to insufficient intake of nutrients for metabolic needs (Hidayat, 2009). According to Wilkinson & Ahern (2015) nutritional deficits are insufficient nutritional intake to meet metabolic needs. Nutritional deficits in diabetes mellitus are caused by the inability to obtain and process food, lack of knowledge about essential nutrients and a balanced diet, discomfort during or after eating, dysphagia, anorexia (loss of appetite), nausea or vomiting, and so on. Improper digestion and absorption of nutrients is due to inadequate hormone production. Nutritional deficits are associated with marked weight loss, general weakness, altered functional ability, delayed wound healing, increased susceptibility to infection, and prolonged hospitalization (Barbara et al, 2011).

In diabetes, cells require insulin to transport about 25% of glucose for energy. Except for nerve tissue, erythrocytes and intestinal cells, liver and renal tubules do not require insulin for glucose transport. Other cells such as, adipose tissue, heart muscle require insulin for glucose transport. Without adequate amounts of insulin, a lot of glucose cannot be used, so that the balance occurs so that blood sugar returns to normal, the body releases glucose through the kidneys, so that a lot of

glucose is in the urine (glucosuria) (Tarwoto, 2012). Glucose that is lost along with urine causes weight loss, this leads to the risk of nutritional deficits (Khasanah, Purwanti, & Sunarto, 2016).

One of the interventions that can be used in the management of diabetes mellitus is through nursing interventions. The management carried out on the nursing problem of nutritional deficit is to identify nutritional status using the parameters of Anthropometri, Biochemical, clinical signs and Diet needed. The results showed that the response obtained in Anthropometry was a decrease in Body Weight from 60 kg to 37 kg, Height 150 cm, Upper Arm Circumference 22 cm, Biocemichal with the results of Random Blood Sugar 250 mg / dl, Haemoglobin 11.3 g / dl, clinical data showed weak body, pale, dry mucosa, appeared nauseous, and dietary data obtained the patient consumed filter food (porridge), Energy 1,800 kcal, Protein 41 grams 33, fat grams, carbohydrates 159 grams. The second implementation is to identify calorie and nutrient needs. The observation results show that the calories and nutrients needed by the client are Energy 1,800 kcal, Protein 41 grams, Fat 33 grams, Carbohydrates 159 grams.

The third implementation monitored food intake. Response: The client had a decreased appetite and only consumed 2 scoops of porridge (104 kcal) and 1 glass of milk (260 kcal). The fourth implementation monitored body weight. Response: The client's weight before the illness was 60 kg but during the illness decreased to 37 kg. The next implementation facilitates determining dietary guidelines. The response obtained is that the client gets a diet of filter food (porridge) and 1 glass of milk. The last implementation is to teach the programmed diet. Response: the client could eat but was a little nauseous and only finished 2 spoons of porridge (104 kcal) and 1 glass of milk (260 kcal) because there was an obstructing Oral Gastric Tube. Recommend eating little but often. Expected response: the client has eaten little but often, but the client is nauseous and can only finish 2 spoons of porridge (104 kcal) and 1 glass of milk (260 kcal) because there is an obstructing Oral Gastric Tube. collaborate with a nutritionist to determine the number of calories and the type of nutrients needed (Low Calorie and Low Sugar). Response: the client received a diit: filter food (porridge), Energy: 1,800 kcal, Protein: 41 grams, Fat: 33 grams Carbohydrate: 159 grams.

Diets in patients with diabetes mellitus contain carbohydrates, fats and proteins. The effect of carbohydrates on blood sugar levels is complex. Refined sugar sources are absorbed faster than carbohydrates derived from starch or fibrous foods such as cereals or fruit. However, it should be noted that the glycemic effect is subject to considerable variability among foods that appear to be similar in composition. Through the glycemic index, the quantity of glycemia in foods can be

determined. Foods with a high glycemic index will cause a faster rise in blood glucose levels. Therefore, it is recommended for patients with diabetes mellitus to choose foods with glycemic index (Snehalatha & Ramachandran, 2009).

A major dietary goal in relation to dietary fat in people with DM is to limit the intake of saturated fat and cholesterol from the diet. Saturated fat is an important dietary determinant of plasma LDL-cholesterol levels.¹ The most important aspect related to dietary composition is saturated fat consumption <10% of total energy or even <8% for patients with high cardiovascular risk. Foods containing high saturated fat that need to be limited are mainly from meat, seafood, dairy products, such as cheese and ice cream. In addition, it is necessary to limit the consumption of snacks, margarine, baked or grilled foods and processed foods that contain a lot of trans fats (Harvard School of Public Health, 2023).

Diet is an important determinant of obesity and insulin resistance. Consumption of high energy and high fat foods, in addition to low physical activity, will change the energy balance with energy stored as stored fat that is rarely used. Excessive energy intake will increase insulin resistance even if significant weight gain has not occurred. High calorie, high fat and low carbohydrate diets are associated with type 2 DM. Diets rich in energy and low in fiber will increase weight gain and insulin resistance even in low-risk populations (Snehalatha & Ramachandran, 2009).

Management of nutritional deficits can be done with non-pharmacological therapy, namely low-calorie high-protein medical nutrition therapy (Brunner & Suddarth, 2013). The aim of preventing hypoglycemia and ketoacidosis is to control the body's total calorie needs, the required intake and achieve normal serum lipid levels. The nutritional composition of a nutritional deficit diet is the need for calories, carbohydrates, fat, protein, and fiber. To determine nutritional status, the body mass index (BMI) formula is used.

The evaluation obtained from the data above is subjective evaluation and objective evaluation. Subjective evaluation is a statement or complaint expressed by the patient. Objective is data obtained from nurse observations. Analysis is a nursing problem experienced by the patient. Planning is an action plan that will be carried out based on analysis. Based on the criteria for results in nursing planning above are as follows: a. Nutritional intake does not deviate from the normal range (scale 5). b. Food intake does not deviate from the normal range (scale 5). c. The ratio of body weight and height does not deviate from the normal range (scale 5) (Moorhead, Johnson, Maas, & Swanson, 2016).

Conclusion

Nutritional deficit is one of the problems that always arise in Diabetes Mellitus caused by many factors. One of the factors is dietary management, especially the consumption of sufficient fat, carbohydrates and fiber will help in controlling blood glucose. This can be controlled through dietary management contained in the Indonesian Nursing Intervention Standards with the hope that blood glucose levels in patients can be controlled and found in the normal range without nutritional deficiencies.

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