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Nursing Care for Mr. S's Family with Diabetes Mellitus in Mipiran Village, Padamara Subdistrict, Purbalingga District

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ABSTRACT

Diabetes Mellitus (DM) is a non-communicable disease. According to World Health Organization in 2021, it is a chronic disease caused by the pancreas that is not producing enough insulin or it is caused by the body that is not using the generated insulin effectively. Insulin is a hormone regulating blood glucose. One of the complications of Diabetes Mellitus is neuropathy. indicated by pain, tingling, and numbness. The possible treatment for this symptom in DM patients The purpose of this study is to provide care to Mr. S 'family especially to Mrs. S. K who has diabetes comes with leg gymnastics to prevent neurological complications from diabetes. The research method used is to provide family nursing care that includes research, nursing diagnosis, intervention, implementation, and evaluation. The research instrument used is the format of suhan nurses, glukometer, tensimeter, NSS scale and newspapers for foot gymnastics. Studies indicate that the family's nursing problems include the inability to care for sick and improved family members. One of the neuropathy treatments for the dm is that with regular, 30-minute exercise, 3-4 times a week, such as the diabetes leg gymnastics of melitus. The study is conducted from Monday, October 31, 2022, to Monday 7, November 2022, in the village of mipiran district district padamara district purbalingga. The result has been that the family has gained insight into diabetes, diabetes mellitusm, legs, and care for sick family members. The results of implementation have been that the exercise of diabetes mellitus feet is effective to lower the NSS score on those with mellitus diabetes. The family can help and remind the patient to continue doing such training to prevent the neurological complications of diabetes.

Keywords : Diabetes Mellitus, Diabetic Foot Exercise

1. INTRODUCTION

The habits of the community in meeting their basic needs certainly influence the health of the body. For example, in maintaining their daily dietary habits, individuals tend to fulfill their nutritional needs without paying attention to the composition of the food they consume, as long as it is delicious enough. As a result, the community often overlooks the food choices, leading to health problems that are sometimes not fully understood by the population. In addition to causing minor health issues, carelessness in maintaining dietary health can also trigger non-communicable diseases (NCDs) (Sepang et al., 2022).

Diabetes mellitus (DM) is one example of a non-communicable disease (NCD) that is prevalent in society. Diseases like heart disease and kidney failure are conditions caused by diabetes mellitus, including blindness. According to the International Diabetes Federation (IDF) in 2019, 463 million people aged between 20 and 79 years old suffered from diabetes worldwide, which is about 9.3% of the global population in the same age group. IDF

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estimated that the prevalence of diabetes was 9% in women and 9.65% in men. The number of diabetes cases is projected to continue rising as the population ages, reaching 19.9% or 111.2 million people in the age group of 65 to 79 years. This number is expected to further increase to 578 million by 2030 and is predicted to reach 700 million by 2045. IDF reports that people with DM aged 20 to 79 years live in the top ten countries with the highest incidence in the world, with China having 116.4 million people, India with 77 million people, and the United States with 31 million people, ranking among the top three countries in 2019. Indonesia is ranked 7th out of 10 countries with 10.7 million affected people (IDF, 2019 dalam Jais et al. , 2021).

The World Health Organization (WHO, 2021, as cited in Sepang et al., 2022) states that diabetes mellitus (DM) is a chronic disease that occurs when the pancreas does not produce enough insulin, or when the body is unable to effectively use the insulin produced. Insulin is a hormone responsible for regulating blood sugar levels. Diabetes mellitus is divided into type 1 and type 2 (American Diabetes Association, ADA, 2017, as cited in Sepang et al., 2022). The American Diabetes Association (ADA) in 2017 revealed that DM is a disease characterized by a disruption in metabolism, where the body's hormones can no longer produce insulin or the body cannot effectively use the produced insulin. According to WHO (2021) in (Sepang et al., 2022), DM is the most common cause of kidney failure, blindness, strokes, heart attacks, and lower limb amputations. The impact of DM affects the quality of life, particularly for families with members suffering from DM. The prevalence of familial DM can be attributed to various factors such as smoking, excess weight (obesity), alcohol consumption, and unhealthy dietary habits (Sepang et al., 2022).

Diabetes mellitus (DM) is a metabolic disorder characterized by elevated blood sugar levels in the body due to disruptions in insulin function, insulin secretion, or both. Various complications can occur in DM patients, including diabetic neuropathy. In neurovascular diseases, the blood supply and oxygen to nerve cells are disrupted. Based on research indicating the increasing prevalence of DM, it is evident that if not addressed promptly, the health consequences of DM can be more severe, including an increased risk of stroke, heart attacks, foot ulcers, nerve damage, infections, diabetic retinopathy, kidney failure, and others (WHO, 2021 dalam Sepang et al., 2022). Therefore, the author is interested in addressing Type 2 Diabetes Mellitus (T2DM) cases within families, with the aim of raising awareness and promoting healthy living behaviors within families to address health issues and enhance the quality of life for every family member (Sepang et al., 2022).

One of the efforts that can be made to prevent diabetes complications is by engaging in diabetic foot exercise. Diabetic foot exercise aims to improve blood circulation, facilitating the smoother flow of nutrients and oxygen within the body's tissues (Afifah et al., 2023).

Based on this background, the researcher intends to provide nursing care for the family of Mr. S, particularly for Mrs. K, who is experiencing diabetes mellitus. The care will include diabetic foot exercise therapy to prevent diabetic neuropathic complications.

2. RESEARCH METHODS

This research employs a case study research method. A case study involves a thorough analysis of a specific selected case, where the conclusions drawn are limited to or applicable to the chosen case (Sugiyono, 2014 in Hidayat, 2021). The design of this research involves gathering data on the nursing care provided to families with Diabetes Mellitus. A case study is utilized in this research because the researcher will conduct interventions, measurements, and observations on families with diabetes mellitus, focusing on family assessment and client examinations.

The subjects of this research are the family of Mr. S, with a particular focus on Mrs. K, who is experiencing diabetes mellitus. The research was conducted from October 31st to November 7th, 2022, in Mipiran Village, Padamara Subdistrict, Purbalingga District. This academic paper primarily focuses on Family Nursing Care for Mr. S, specifically for Mrs. K, with a focus on diabetic foot exercise

interventions in Mipiran Village, Padamara Subdistrict, Purbalingga District.

The data collection technique used in this research involves direct observation of the family to obtain data on the health condition of Mr. S's family. This includes physical examinations such as blood pressure measurements, GDS (Glucose Dispersion System) tests, and interviews with Mr. S's family.

The instruments used in this research include the family nursing care format following the regulations of Universitas Harapan Bangsa, a sphygmomanometer, and a glucometer to measure GDS before the intervention. Additionally, newspapers are used for diabetic foot exercises, and the NSS (Neuropathy Symptom Score) scale is employed (Pamungkas & Usman, 2021). Diabetic foot exercises are performed every day for three days, with each session lasting 20 minutes. This research has obtained ethical approval with the reference number No. B.LPPM-UHB/2045/07/2023.

3. RESULT AND DISCUSSION

3.1 Data Analysis

Data collection was conducted in the home of Mr. S's family, located in Mipiran Village, RT 10/RW 04, Padamara Subdistrict, Purbalingga District, from Monday to Wednesday, from October 31, 2022, to November 2, 2022. The assessment results revealed the core health history of family members. Mr. S reported no health-related complaints. When he does experience pain, he does not seek medical care but prefers to get adequate rest at home.

On the other hand, Mrs. K's health history indicated that she has a history of diabetes mellitus and gout. She has been dealing with diabetes mellitus since 2019. During the assessment, Mrs. K mentioned that she was currently experiencing stiffness and pain in her hand and foot joints, general body fatigue, a sensation of heat in her feet, and occasional numbness. After participating in the Posbindu program on October 22, 2022, she had her uric acid levels tested, and they were found to be high, measuring 8 mg/dL. Additionally, her blood glucose level was 170 mg/dL.

Both Mr. S and Mrs. K are aware of the family's health issues. They know that Mrs. K has a history of diabetes mellitus and gout. Mrs. K mentioned stiffness in her hands and feet and occasional numbness. She complained of pain in her knee joints, calves, and the soles of her feet, experienced both during the day and at night. On November 2, after conducting further assessments, Mrs. K's uric acid level was measured at 4.2 mg/dL, her blood pressure was 150/90 mmHg, and her blood glucose level remained at 170 mg/dL. Following the assessment, the NSS (Neuropathy Symptom Score) was calculated to be 7, indicating a severe level of symptoms (Pamungkas & Usman, 2021).

3.2 Nursing Diagnoses

From the assessment data mentioned above, nursing diagnoses were derived. The nursing diagnoses selected were 'Health behavior tendencies at risk related to the family's inability to care for sick family members,' with a score of 3.5, and 'Readiness for improved knowledge,' with a score of 2.8. The primary nursing diagnosis chosen is 'Health behavior tendencies at risk related to the family's inability to care for sick family members.

3.3 Nursing Care Plan

The nursing care plan, implemented after 3x24 hours of nursing intervention, aims to improve health behavior. The criteria for successful outcomes include increased receptiveness to changes in health status, improved ability to undertake preventive health measures, enhanced health improvement capabilities, and an increased achievement in health management. The interventions adopted are as follows:

Health Behavior Education: Provide health behavior education, considering the recipient's capacity and readiness to receive information. Supply educational materials and health education media, and teach daily health programs.

Health Behavior Promotion: Identify health behavior practices that can be enhanced and encourage daily physical activity.

3.4 Implementation and Evaluation

The results of the implementation on the first day of diabetic foot exercises showed that Mrs. K had some difficulty with the leg movements. After the diabetic foot exercises, the evaluation indicated that Mrs. K felt more comfortable, and her blood circulation improved.

On the first day, the intervention involved introducing oneself, explaining the purpose of the activity, identifying the readiness and capacity of Mr. S's family to receive information, providing educational materials and health education media, scheduling health education according to the agreement (scheduled for November 5, 2022), and allowing Mr. S's family to ask questions before starting the activity. Health education was then provided, starting with the first topic, which covered uric acid, including its definition, limits, causes, proper diet for uric acid, complications associated with uric acid, and uric acid therapy. The second topic covered diabetic foot exercises, including their definition, objectives, benefits, timing, and practical implementation of diabetic foot exercises.

The results of the implementation on the first day of diabetic foot exercises showed that Mrs. K had some difficulty with the leg movements. After the diabetic foot exercises, the evaluation indicated that Mrs. K felt more comfortable, and her blood circulation improved. The NSS score after the diabetic foot exercises was 6 (moderate), indicating a decrease in NSS score for Mrs. K compared to the assessment before the diabetic foot exercise intervention.

The research results indicate that in non-pharmacological treatment, the researcher provided diabetic foot exercises as the primary intervention to reduce pain, numbness, and tingling in the feet in diabetes mellitus. Diabetic Foot Exercise is one of the non-pharmacological treatments that can improve blood circulation, strengthen the small leg muscles, and prevent deformities in the feet. Additionally, leg exercises can enhance the strength of thigh and calf muscles while increasing joint mobility. Performing diabetic foot exercises (3-4 times within a 5-10 minute period) is a key element in the treatment of diabetes (Zahro & Sutiyono, 2022).

According to Black & Hawk (2005), diabetes type 2 is most frequently diagnosed in adults and specific ethnic groups. Type 2 diabetes is a type of diabetes not dependent on insulin. This type of diabetes is usually only diagnosed in adults over the age of 40 and is more common in certain ethnic groups. As people age, their cells become increasingly resistant to insulin, the elderly's ability to break down glucose decreases, and the secretion of insulin from pancreatic β cells also decreases and becomes impaired (Paojoh & Yoyoh, 2019).

The implementation results on the 2nd day, Sunday, November 6, 2022, at 09:30 AM WIB involved identifying Mr. S's family's readiness and ability. This was achieved by inquiring with Mrs. K about her willingness to engage in diabetic foot exercises once more. Subsequently, Mrs. K was given the opportunity to ask questions before the activity commenced.

Following that, the researcher and Mrs. K performed diabetic foot exercises again, and it was observed that Mrs. K felt more comfortable during the exercise. Mrs. K applied these exercises when she experienced sudden tingling or numbness in her feet. The NSS score after this intervention was 4 (moderate).

The researcher then recommended to Mr. S's family, particularly to Mrs. K, to perform these exercises when she experiences sudden tingling in her feet. Additionally, the researcher explained the duration, frequency, and intensity of the diabetic foot exercise program. A future appointment was scheduled for the implementation on the 3rd day.

The implementation results on the 3rd day, Monday, November 7, 2022, at 09:30 AM WIB, involved the researcher returning to Mr. S's house. The implementation consisted of identifying the readiness and ability of Mr. S's family by inquiring about their willingness to engage in diabetic foot exercises once more.

Subsequently, the researcher and Mr. S's family performed diabetic foot exercises together and evaluated the results. Following the exercise, an assessment of the NSS score was conducted, resulting in a score of 4 (moderate).

The researcher then provided support and praise for the family's achievements and efforts over the past three days. Additionally, the researcher recommended to Mrs. K to continue with the diabetic foot exercises and advised her to maintain her dietary habits for uric acid and diabetes mellitus to ensure her health remains stable.

After the exercise, Mrs. K mentioned that her feet felt much more comfortable than before, especially when they used to feel stiff. She expressed her intention to regularly engage in these exercises, especially when she experiences sudden tingling and numbness in her feet. Mrs. K also noted that after a few days of performing these exercises, her feet, which used to frequently experience tingling, no longer do. This research is consistent with the study by Simamora et al., 2020 which showed a reduction in neuropathy scores in the feet before diabetic foot exercises, with a score of 2.81, which decreased to 1.88 after the intervention of diabetic foot exercises. The symptom scores predict high values for screening polyneuropathy in diabetes. Symptoms such as paresthesia, instability when walking, and neuropathic pain are experienced by individuals with diabetes mellitus (Simamora et al., 2020).

Another study conducted by (Yulita et al., 2019) reported a decrease in neuropathy values in the group that underwent diabetic foot exercise intervention, from 8.75 to 6.50. This indicates that diabetic foot exercise intervention can lead to a decrease in the average neuropathy values in individuals with diabetes mellitus. Soegono (2009) suggests that the recommended leg exercise for individuals with diabetes mellitus who experience neuropathy is foot exercises (Yulita et al., 2019). Diabetic foot exercises themselves are activities performed by patients with diabetes mellitus to help improve blood circulation and prevent foot injuries (Widiandi & Proverawati, 2010 dalam Yulita et al., 2019).

Waspadji (2012) stated that foot exercises are one of the non-pharmacological therapies that can be administered by a nurse with the aim of improving impaired blood circulation. This is because diabetic foot exercise interventions are useful for strengthening the small muscles in the legs of patients with diabetes mellitus who experience neuropathy and for enhancing the circulation of impaired blood. In addition, foot exercise interventions are beneficial for addressing joint mobility limitations, strengthening thigh muscles, calf muscles, and preventing foot deformities (Yulita et al., 2019).

The results of the diabetic foot exercise implementation, carried out for 3 days in Mr. S's family, especially with Mrs. K, have been highly effective as a non-pharmacological therapy for individuals with diabetes mellitus. This approach not only doesn't require expensive costs but also provides noticeable benefits, as expressed by Mrs. K. She mentioned improved blood circulation in the leg area, reduced occurrences of tingling sensations compared to before starting the exercises, and the strengthening of muscles, as well as preventing foot deformities.

CONCLUSSION

Nursing care began with an assessment, including vital signs, supporting examinations, physical examinations, and medical history. Based on the results of the nursing care in the above section, it can be concluded that the assessment in nursing care performed on Mr. S's family generated data analysis that aligns with the priority issue, which is the tendency for health-related behavior to be at risk due to the family's inability to care for the sick family member.

The initial assessment of nursing care in Mr. S's family indicated that Mrs. K complained of pain in her knee joints, calves, and the soles of her feet, experiencing discomfort both during the day and at night. From the final evaluation of the implementation of diabetic foot exercise therapy, it was shown to be effective as a non-pharmacological therapy to improve blood circulation. The leg area felt more comfortable, and it prevented bone deformities in Mr. S's family, especially in

Mrs. K, who has diabetes mellitus. This was evidenced by the fact that after performing diabetic foot exercises three times, the evaluation results on the third day showed that Mr. S's family was capable and willing to receive information from the researcher and agreed to perform diabetic foot exercises again according to the previously agreed schedule.

After the exercises, Mrs. K mentioned that her feet felt much more comfortable than before, especially when they used to feel stiff. She expressed her intention to regularly engage in these exercises, especially when she experiences sudden tingling and numbness in her feet. Mrs. K also noted that after a few days of performing these exercises, her feet, which used to frequently experience tingling, no longer do.

The influence of diabetic foot exercise therapy on neuromuscular pain with the nursing diagnosis of health-related behavior at risk due to the family's inability to care for the sick family member was observed in Mipiran Village, Padamara District, Purbalingga Regency.

RECOMMENDATION

It is hoped that education can further develop the knowledge of family nursing health and interventions such as diabetic foot exercises for its participants. This way, education and skills related to diabetic foot exercise intervention can be improved for future application as teaching materials in the field of family nursing. It is also expected that educational institutions can conduct further research to advance the knowledge of diabetic foot exercises for diabetes mellitus, making it applicable to a wider population. With the ease of implementation and significant benefits, it is expected that nurses will be able to apply diabetic foot exercise techniques to individuals with diabetes mellitus.

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