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Conference Paper

Health Education About Self-Care Management for Type 2 Diabetes Mellitus Patients During the COVID-19 Pandemic: A Case Study in Nursing

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Abstract.

Diabetes mellitus (DM) is a risk factor for COVID-19 and is a comorbid condition that can lead to death in these patients. Health education for DM patients needs to be done to prevent serious complications. This study aimed to describe nursing problems experienced by DM patients during the COVID-19 pandemic. This research used an exploratory case study method. The sample of this research was one case of a DM patient who was treated at home, recruited by purposive sampling. Data were collected through interviews, physical examination, environmental observation, and the Friedman's family nursing assessment instrument. The implementation of health education about self-care management in DM patients during the COVID-19 pandemic made the family feel significantly informed and supported, so that the family started to be careful in carrying out activities during the pandemic that could endanger the patient's health.

Keywords: health education, self-care management, diabetes mellitus, nursing, COVID-19

1. Introduction

Coronavirus disease-2019 (COVID-19) has been designated as a highly contagious infectious disease caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2)[1]. During the pandemic, there were many gaps in health services. DM patients experienced impaired glucose control. The main reason was the unavailability of insulin / glucostrip due to limited stocks in rural and semi-urban areas and the limitation of transportation during the lockdown period [2].

One chronic disease that needs attention is a patient with DM [2]. In patients with DM, diet and activity are one of the self-management that must be done regularly. When

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the pandemic has significantly decreased dietary adherence and decreased physical activity, and increased anxiety and depression rates, this can lead to non-compliance and worsen patients' health with DM. During a pandemic like this, self-management education is needed to prevent complications; low self-management leads to higher blood sugar, cholesterol, and blood pressure results [3].

¹ The International Diabetes Federation (IDF) Organization, estimates that at least 483 million people aged 20-79 years in the world have diabetes in 2019, or the equivalent prevalence rate of 9.3% of the total population of the same age. The prevalence of DM is estimated to increase with the increasing age of the people to 19.9% or 111.2 million people at the age of 65-79 years. The numbers are predicted to increase in 2030 to reach 578 million people and 700 million people in 2045. In Southeast Asia, it is ranked third, with a prevalence of 11.3%. The IDF also projects the number of DM sufferers in the population aged 20-79 years in several countries that have identified ten countries with the highest number of sufferers. Indonesia is ranked 7th among the ten countries with the highest number, namely, ten sufferers [4].

The 2018 RISKESDAS data explains the national prevalence of DM is 8.5% or around 20.4 million Indonesians who suffer from diabetes [5]. The increase of DM sufferers in Indonesia increased by 2% over five years, namely. In 2013, DM sufferers in Indonesia were 6.9%, and in 2018 it increased to 8.5%. The average prevalence of DM sufferers aged 15 years and over in East Java is 2%, and Batu City, Indonesia has 2.47% of DM sufferers.

Education given to DM patients is a process that facilitates the knowledge, skills, and self-care abilities of patients [6]. Lifestyle management, such as physical activity, diet, medicine, and checking and controlling blood sugar, is a strategic effort to reduce the risk of further complications in DM sufferers [7]. Knowledge about self-monitoring, signs, and symptoms of hypoglycemia, and how to overcome it must be given to patients. Education to promote healthy living needs to be done as part of prevention efforts and is a crucial part of managing DM holistically [8].

Health education can be provided with online services during this pandemic by using mobile phones, web or computers, text messaging and checking blood glucose independently [9]. Self-care success is obtained from the participation of patients, families, and communities through health education or health education [10]. Family support is a strong indicator that can positively impact self-care for patients with DM [11].

¹ Good family support will affect someone in DM self-care [12]. Good family support, the higher the motivation of DM sufferers in controlling sugar levels [13]. The purpose

of this study is to describe the problems of self-care, implementation, and successful implementation of health education on self-care management in DM patients during the COVID-19 pandemic.

2. Method

This research design is a case study that uses an exploratory case study method. The population of this study was DM patients who were treated at home. The sample of this research is one case of a DM patient who was treated at home. Samples were taken by purposive sampling. The inclusion criteria in this study were typed 2 DM patients who live with the patient's family, can communicate well, can write or read correctly and adequately, and family members are willing to be interviewed by researchers. The exclusion criteria were typed 2 DM patients who had severe complications, DM patients who were experiencing severe illness or were undergoing treatment at the hospital, and patients or their families who tested positive for COVID-19 by the local health service.

3. Instrument

The instrument used for data collection was Friedman's family nursing assessment, namely determining the family structure, individuals who comprise the family, the relationships between them, interactions between family members, and interactions with other social systems [14]. Data collection uses various methods, such as interviews, physical assessment, and environmental observation. The nursing implementation used is adopted from the Indonesian Nursing Diagnostic Standards (IDHS), the Indonesian Nursing Intervention Standards (SIKI), and the Indonesian Nursing Outcomes Standards (SLKI) (Figure 1).

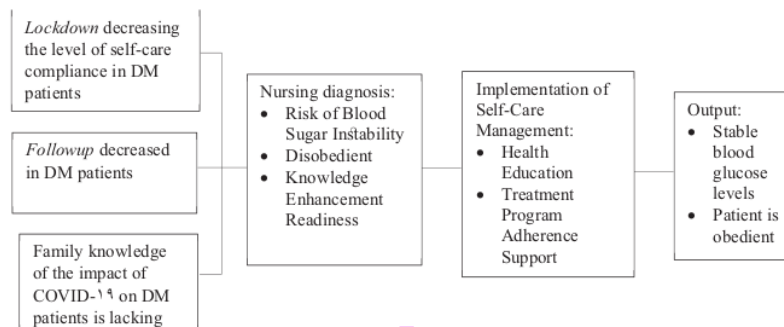


Figure 1: Implementation Model of DM Patients during the COVID-19 pandemic.

Nursing implementation in health education about self-care management in DM patients includes health education and treatment program adherence support (table 1).

TABLE 1: Implementation of Self Care Management in DM Patients

Session	Method	Theme	Content	Duration (min)
1	Face-to-face education session	Hyperglycemia management And Health Education	Opening (asking how are you and what are the complaints today?) Identify possible causes of hyperglycemia Check the GDS and get the results 325 mg/dl, Educate the signs and symptoms of hyperglycemia Encourage adherence to diet and exercise. Question and answer	15
2	Face-to-face education session	Health Education	Provide health education about what can be consumed by Mr. Y, Providing education on Clean and Healthy Living Behavior (PHBS) to families, especially to maintain health and cleanliness, such as taking a bath immediately after doing activities outside the home, also providing education about using masks and washing hands in 6 steps Question and answer	20

4. Result

The client named Mr. Y, 58 years old who lives in Batu City, lives with his family in 1 house. Mr. Y is in high school. Mr. Y is the head of the family, where he lives with his wife, children, son-in-law, and three grandchildren. Mr. Y has a heart attack history in June 2015 caused by his blood sugar, which reached 650 mg/dl. Mrs. Mr. Y is a DM patient with a history of diabetes mellitus for ten years. The client said that he did not go to the posyandu or puskesmas, but once a month, he checked his blood sugar level on his wife's sister, who happened to be a midwife at the puskesmas. Mr. Y takes medicine for his blood sugar, namely Glucovance, once a day, and there is the Citaz medicine, but it is only taken if he is tired or if he feels unwell.

At the time of the assessment, the client said that he often felt lethargic even though he was resting; he was often BAK and often felt thirsty. Mrs. E, as Mr. Y asked what kind of food Mr. Y? Mrs. E also always made sure that Mr. Y was taking medicine regularly and according to the doctor's recommendations. When the inspection was carried out Mr. Y obtained the results of BP: 120/90 mmHg, N: 80, and RR: 16. Three days ago, Mr. Y checked his GDS results and got 250 mg/dl. In the study, Mrs.E explained that Mr. E was not allowed to walk again during this pandemic. Mr. Y was only allowed to go to the garden. Mrs.E also said that Mr. Y's diet and drug consumption were slightly

disturbed due to the economic situation. The family is not well because the PSBB was implemented, which had an impact on the income of Mr. Y, who worked as a farmer, and suffered losses due to lower vegetable prices.

4.1. Glucose level instability

The data indicate the instability of glucose levels: the client says that his body feels lethargic even though he has rested, often has BAK, and is often thirsty. Objectively obtained supporting data for these nursing problems, namely the GDS value: 250 mg/dl.

4.2. Readiness to increase knowledge

Mrs. E also explained that limiting Mr. Y to walk it reduces activity physically performed by Mr. Y so that there is a reduction in activity experienced by Mr. Y. Mrs. E asked about any food that can be consumed by Mr. Y? And also, Mrs. E explained that the diet that he is currently living is a little disturbed because family income is decreasing as a result of the existing PSBB. Obtained also objectively supporting data for these nursing problems, namely NY. E always made sure that Mr. Y took medicine according to the doctor's advice and Mrs. E also restricts Mr. Y from sightseeing.

5. Discussion

5.1. Glucose level instability

Glucose levels in the blood are associated with impaired blood glucose tolerance. DM is a co-orbit, and about 20% of COVID-19 patients have a DM history [15]. Some of the causes of type II diabetes that can exacerbate COVID-19 infection are: Patients with type 2 DM may be more susceptible to inflammatory cytokine storms that eventually cause rapid damage due to COVID-19 and reduced control over the spread of the virus [16]. COVID-19 patients with DM mostly experience moderate to severe conditions with many cases in the ICU. There are many cases of COVID-19 that end badly and have a bad prognosis if accompanied by DM [17]. Blood glucose control and close monitoring of glucose levels are essential in managing COVID-19 patients with diabetes [18].

Patients with DM are very susceptible to infection due to hyperglycemia, impaired immune function, and comorbidities such as hypertension, dyslipidemia, and cardiovascular disease [15]. In chronic hyperglycemia, angiotensin-converting enzyme 2 (ACE2)

is increasing; this can facilitate the virus to bind, which in turn results in multi-organ (including β -cell) damage caused by SARS-CoV2. ¹ This would show that not only type 2 DM can worsen COVID-19, but also COVID-19 can cause direct injury to β -cells.[19].

5.2. Readiness to increase knowledge

The second diagnosis that is upheld is the readiness to increase knowledge. Education to promote healthy living needs to be done as part of prevention efforts and is a crucial part of managing DM holistically. Self-management is an activity carried out by individuals in carrying out an action based on their wishes to manage their illness [20]. Several factors affect DM sufferers not carrying out self-care with discipline, including low family and patient knowledge, lack of social and family support, and less than optimal health services utilization [21].

¹ Self-care management education for DM sufferers during the COVID-19 emergency can be carried out by distributing educational materials through mobile applications or computer-based interventions, text messaging, and self-monitoring of blood glucose levels [9]. Education using CDs increases DM patients in doing physical activity, controlling blood sugar, and diet.

5.3. Recommended Advanced Intervention Therapy

For clients with DM disease, further intervention can be carried out in increased physical activity and compliance with the diet. Physical activity that DM sufferers are recommended by WHO is to exercise for 30 minutes every day and do at least 5 days a week for moderate-level exercise or 25 minutes a day at least 3 days in 1 week with a hefty intensity minimum of physical activity. It is recommended to live healthily and avoid complications of DM [22]. The principle of eating arrangements for people with DM is almost the same as the general public's recommended meal. DM patients need to emphasize the importance of regular meal schedules, the type and amount of calorie content, especially in those who use drugs that increase insulin secretion or insulin therapy alone [23].

6. Conclusion

Self-care problems in DM patients during the COVID-19 pandemic blood glucose level instability and knowledge enhancement readiness. The implementation of health education on self-care management in DM patients during the COVID-19 pandemic includes identifying the causes of hyperglycemia, checking GDS, and educating what signs and symptoms are in the event of hyperglycemia. Evaluating the implementation of health education on self-care management in DM patients during the COVID-19 pandemic, the family felt significantly helped by the information provided so that the family started to be careful in carrying out activities during the pandemic because it could endanger Mr.'s health. Y.

7. Declarations Ethics approval and consent to participate

This case study because only one case it is only necessary permission from the faculty of health sciences University of Muhammadiyah Malang. Oral informed consent was obtained from the study subjects. Anonymous data were taken to maintain the privacy and confidentiality of the study participant.

8. Consent for publication

NA

9. Availability of data and material

The datasets supporting the conclusions of this article are included within the article

10. Competing interests

The authors declare that they have no conflict of interest.

11. Funding

No funding was available for this study

12. Authors' contributions

DDN and YBP contributed to the literature review, research design, analysis, and writing of the manuscript. The authors read and approved the final submitted paper.

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