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OVERVIEW OF SELF-CARE BEHAVIOR IN PATIENTS WITH TYPE II DIABETES MELLITUS : LITERATURE REVIEW

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Literature Review

A B S T R A C T

Introduction *: Diabetes Mellitus is a chronic disease that requires self-care to improve the quality of life and reduce the occurrence of complications. Self-care behaviors that can be applied by DM patients include physical activity, diet regulation, control of blood glucose levels, treatment, and prevention of complications. The purpose of this literature review is to describe self-care behavior in Type II Diabetes Mellitus patients.* ***Methods****: Literature Review using the PICOT framework from several databases (Scopus, Science Direct, Google Scholar, Research Gate and Pubmed). The search results are displayed in the PRISMA. Abstracts and full articles were assessed for eligibility (n = 34), The articles correspond to research feasibility in quantitative studies (n = 12).* ***Results****: After collecting data, all data were selected according to the inclusion. Based on a review article, the self-care regimen for type 2 Diabetes Mellitus patients generally includes physical activity, diet, controlling blood glucose levels, monitoring blood glucose and medication. However, most of the respondents' compliance with self-care management behavior in type 2 Diabetes Mellitus (DM) patients has not been carried out optimally.* ***Conclusions****: The role of nurses is important in increasing adherence to self-care behavior in Diabetes Mellitus patients.*

A R T I C L E I N F O

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INTRODUCTION

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood sugar. Hyperglycemia, or elevated blood sugar, is a common effect of uncontrolled diabetes and over time causes serious damage to many body systems, especially the nerves and blood vessels (WHO, 2001).

World Health Organization (WHO) predicts Diabetes will be the 7th leading cause of death by 2030. Diabetes is found in every population in the world and in all regions, including rural low- and middle-income countries. The number of people with diabetes continues to increase, WHO estimates that there were 422 million adults with diabetes worldwide in 2018. The prevalence with age in adults rose from 4.7% in 2018, with the largest increase in low populations. and middle-income countries compared to high-income countries (Kementerian Kesehatan RI., 2020)

The Southeast Asia region where Indonesia is ranked 3rd with a prevalence of 11.3%. Indonesia is ranked 7th among 10 countries with the highest number of sufferers, which is 10.7 million. The results of the Basic Health Research (Riskesdas) show that the prevalence of diabetes mellitus in Indonesia based on a doctor's diagnosis at the age of > 15 years is 2%. However, the prevalence of diabetes mellitus according to the results of blood sugar examination increased from 6.9% in 2013 to 8.5% in 2018 (Simatupang, 2023). Without interventions to stop the increase in diabetes, there will be at least 629 million people living with diabetes by 2045 (WHO, 2001). Therefore, it is important to control glucose levels in the blood of people with diabetes mellitus.

Metabolic and lipid control in DM patients can be done through increasing self-care behavior (Amelia, 2018). Self-care behaviors that can be applied by DM patients include physical activity (exercise), diet regulation, control of blood glucose levels, treatment, and prevention of complications (Sorato M & C,

2016). The adherence of DM patients to routine and lifelong self-care measures is a big challenge and is not easy to do (Luthfa & Ardian, 2019). The adherence of DM patients in performing self-care such as diet, blood glucose monitoring and foot care is relatively low (Mogre et al., 2017) .

Self-care management behavior in type 2 Diabetes Mellitus (DM) patients has not been carried out optimally (Istiyawanti et al., 2019). The self-care level of Type II DM patients is 52.89% which is included in the moderate category (Fithriani & Istibsaroh, 2019). Showed that patients with type 2 diabetes who received outpatient treatment had 65.4% self-care in the poor category and 48.1% with a poor quality of life (Kusnanto, 2012). According to the American Association of Diabetes (ADA), diabetic patients really need self-care behavior to improve quality of life and reduce the occurrence of complications due to diabetes.

The success of a treatment, both primary and secondary, is strongly influenced by the compliance of Diabetes Mellitus patients in maintaining their health. Primary and secondary treatment can be carried out optimally and the quality of health. Diabetes Mellitus patients who do not have the self-awareness to comply can cause failure in treatment and reduce the patient's health status (Greeson & Chin, 2019). Diabetes Mellitus demands new lifestyle changes for a lifetime and diabetic patients must be able to adapt to undergo life changes. The purpose of this literature review is to describe self-care behavior in Type 2 Diabetes Mellitus patients.

MATERIALS AND METHODS

Design and Search Method

This research is a literature review with a narrative method that tries to explore the results of research in Indonesia and internationally (Sukartini et al., 2023). Search journals on several databases, including (Scopus, Science Direct, Google Scholar, Research Gate and Pubmed) with keywords; self-care, self-care behavior, diabetes mellitus, adherence, blood glucose. The search for this journal is limited to the last 5 years from January 2015 to October 2020, fulltext, journals that are appropriate to the topic. The search results are displayed in the PRISMA diagram (Figure 1).

Inclusion and Exclusion Criteria

This literature review begins with a search for articles using the PICOT framework (Problem/Population = diabetes mellitus / type II diabetes mellitus, Intervention = self-care/ self-care behavior, Comparation = self-care behavior, and Outcome = adherence/ blood glucose.

Screening

In the screening process, a selection of journals is carried out which includes the language used (Indonesian or English), selecting the title and the existence of duplicate journals and identifying the abstract.

Data Extraction

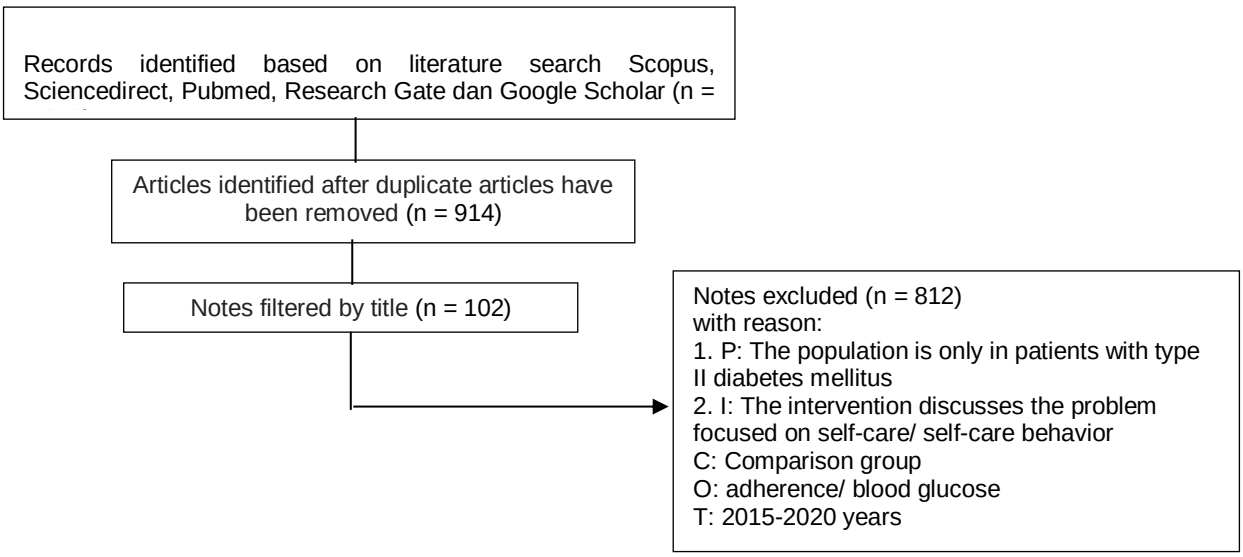
The data obtained was extracted in the form of a table by including the author, journal name, year, method and research results.

Critical Review

The critical appraisal process uses the Critical Apprisal Skills Program to assess the quality of research articles.

Data analysis

Data analysis used thematic analysis, with the following steps: 1) understanding the data, identifying the code, 3) identifying the theme of the code, 4) improving the theme, 5) defining the theme



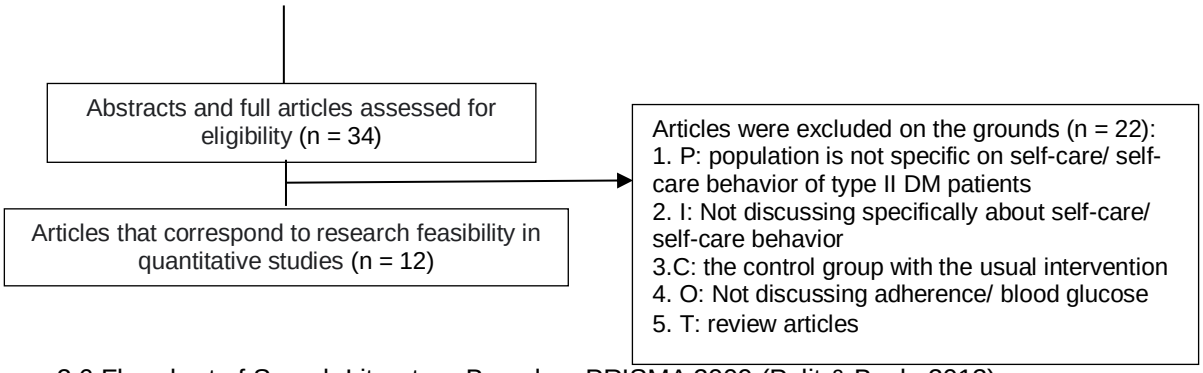


Figure 2.6 Flowchart of Search Literature Based on PRISMA 2009 (Polit & Beck, 2013).

RESULTS

Table 1. Journal Search Results

No	Title, Authors, Year	Method	Results
1	Association of Self-Care Behaviors and Quality of Life among Patients with Type 2 Diabetes Mellitus: Chaldoran County, Iran (Babazadeh et al., 2017)	D: cross sectional study S: 120 participants V: Self-care behavior, physical health I: self-management of blood glucose control, self- care nutrition A: Multi-variable logistic regression	Self-care behaviors were significantly associated with quality of life; among them, the greatest influence was observed in self-care nutrition behavior. Based on the findings of this study, appropriate interventions on self-care behavior about nutrition can improve the quality of life of T2DM patients.
2	Predictors of Adherence to Self-Care Behavior Among Patients with Diabetes at Public Hospitals in West Ethiopia (Oluma et al., 2020)	D: cross-sectional study S: 423 diabetic patients V: Self-care behaviors, Adherence, I: demographic questions developed, Summary of Diabetes Self-Care Activities (SDSCA) questionnaire, diabetes mellitus self-efficacy scale (DMSES) A: multivariate linear regression	The overall prevalence of adherence to self-care behaviors is low. Self-efficacy, home blood glucose test, exercise per week, meal planning, dietary restriction, duration of diabetes, type of medication and description of appetite were significant variables related to adherence to self-care behavior.
3	Diabetes related knowledge, self-care behaviours and adherence to medications among diabetic patients in Southwest Ethiopia: a cross-sectional survey (Kassahun et al., 2016)	D: cross-sectional survey S: 309 respondents V: Diabetes knowledge, self-care behaviours and adherence, glycemic control level I: Expanded Version of the Summary of Diabetes Self-Care Activities (SDSCA), The Diabetes Know- ledge Test (DKT) A: multinomial logistic regression	A significant number of DM patients have low levels of knowledge, poor self-care behavior and low levels of adherence to treatment. These findings call for the need for integrated management interventions on diabetes knowledge, self-care behaviors and medication adherence. To ensure effective T2DM management, a strategic approach that improves health literacy can be a cross-sectoral intervention.
4	Self-Care Behaviors of Adults with Type 2 Diabetes Mellitus in Greece (Chourdakis et al., 2014)	D: cross sectional study S: 177 patients V: Self-Care beavior, I: Summary of Diabetes Self-Care Activities (SDSCA), ques- tions on various anthropometric parameters (age, height, body weight, sex, waist circumference (WC), hip circum- ference (HC)) and demographic data A: Multi-variable logistic regression	Exercise patterns were more common in men who were more educated and diagnosed earlier. Younger patients were less likely to follow their health care professional's recommendations regarding diet, medication intake, blood glucose checks, foot care, and exercise compared to older patients. These results pose a higher risk of complications and morbidity in young patients with type 2 diabetes mellitus, who are likely to require intensive care in the future.

No	Title, Authors, Year	Method	Results
5	Determinants of adherence to self-care behavior among women with type 2 diabetes: an explanation based on health belief model Mahmood (Karimy et al., 2016)	D: cross-sectional study S: 210 patients V: Self-care behaviors, Health Belief Model Constructs I: Diabetes Self-Care Activities (SDSCA) scale A: The multiple regression models	HBM can be used as a framework for designing intervention programs in an effort to increase adherence to self-care behaviors of women with diabetes. Moreover, the results suggest that self-efficacy may play a more important role in developing self-care behaviors than other components of the HBM. Therefore, if focus is placed on self-efficacy when developing educational programs, it can increase the likelihood of adherence to self-care behaviors.
6	Association of Self-Care Behaviors and Quality of Life among Patients with Type 2 Diabetes Mellitus: Chaldoran County, Iran (Babazadeh et al., 2017)	D: cross-sectional study S: 120 T2DM patients V: self-care behaviors' , quality of life I: self-care behaviors' question- naires were, The quality of life's questionnaires from World Health Organization A: linear regression method	Self-care behaviors were significantly associated with quality of life; among them, the greatest influence was observed in self-care nutrition behavior. Based on the findings of this study, appropriate interventions on self-care behavior regarding nutrition can improve the quality of life of T2DM patients.
7	Levels and Predictors of Adherence to Self-care Behaviour among Adult Type 2 Diabetics at Arba Minch General Hospital, Southern Ethiopia (Sorato M & C, 2016)	D: cross sectional study S: 194 Patients V: Glycaemic control, Medication adherence, Problem solving, Risk reduction, respondents, Self-care behaviour, Self-monitoring of blood glucos I: Summary of diabetes self-care activities (SDSCA) , Morisky Medication Adherence Scale (MMAS) A: Multiple logistic regression	This research reveals that; adherence to self-care behaviors, especially physical activity, self-monitoring of blood glucose; problem solving and low glycemic control in adults with type 2 diabetes. In this study the respondents had a high level of knowledge about diabetes and its treatment principles but inappropriate self-care practices. Respondent's age, age at diabetes onset, monthly income, and age at diagnosis of diabetes as independent predictors of adherence to self-care behaviors.
8	Adherence to and factors associated with self-care behaviours in type 2 diabetes patients in Ghana (Mogre et al., 2017)	D: cross-sectional study S: 201 patients V: diet (general and specific), exercise, exercise, self-monitoring of blood glucose (SMBG) and foot care. Methods: I: Summary of Diabetes Self-Care Activities Measure, demographic characteristics and diabetes history A: Multiple linear regression analyses	Adherence to diet, SMBG and foot examination was relatively low. People with low education and women may need additional support to improve adherence to self-care behaviors in this type 2 diabetes population.
9	Adherence to Self-Care Behaviors among Patients with Type 2 Diabetes—The Role of Risk Preferences (Simon-Tuval et al., 2016)	D: cross-sectional study S: 408 partisipant V: self-care behavior, adherence, risk preferences, motivation, self-efficacy, impulsivity, perceptions I: Summary of Diabetes Self-Care Activities physical activity and participation in specific exercise sessions), blood glucose mon- itoring (testing in general and testing the number of times recommended), foot care (checking feet and inspecting inside shoes), and medication (taking the recommended medications and in the recommended amount). A: Multivariable analyses	The results show that risk preference is associated with compliance. In particular, estimating patient attitudes toward risk and identifying risk seekers can improve the ability of health systems to target these patients with tailored strategies to improve adherence to disease self-management.
10	Self-care practices regarding diabetes among diabetic patients in West Ethiopia	D: cross sectional study S: 252 participants V: Self-care practices, Diabetes knowledge, Glycemic control	The study concluded that the study participants' self-care practices were poor. In certain blood glucose testing domains the practice of self-care was

No	Title, Authors, Year	Method	Results
	(Dedefo et al., 2019)	I: Diabetes knowledge The Diabetes Knowledge Test (DKT), Glycemic control was assessed by using Fasting Blood Glucose (FBG) level. A: multivariable logistic regression	very poor and there was relatively good foot care among the study participants. So we recommend that health care providers should start by taking the time to evaluate their patients' perceptions and make realistic and specific recommendations for self-care activities.
11	Magnitude of diabetes self-care practice and associated factors among type two adult diabetic patients following at public Hospitals in central zone, Tigray Region, Ethiopia, 2017 (Mariye et al., 2018)	D: cross-sectional study S: 284 patients V: Diabetic self-care practice, Socio-demographic factors, Diabetes health belief, Diabetic knowledge, Clinical characteristic Duration of DM I: Diabetic self-care practice scale, Socio-demographic questionnaire A: multivariable logistic regression	More than half of the respondents had poor self-care practices. Thus, health care personnel and Ethiopian diabetes associations should increase patient awareness of the importance of the domain of self-care practice and strongly promote the practice among diabetic patients by strengthening IEC programmes.
12	Self-care practices of Chinese individuals with diabetes (Zhou et al., 2013)	D: cross-sectional study S: 163 Chinese individuals with DM V: Self-Care Activities, blood glucose I: Summary of Diabetes Self-Care Activities (SDSCA), self-monitoring of blood glucose (SMBG) A: multivariable logistic regression	Deficiencies in diabetes-related knowledge and self-care practices arise among a large proportion of patients with suboptimal blood glucose control. An understanding of the importance of self-care practices requires improvement in individuals with diabetes. The development of effective educational strategies to raise awareness of self-care practices by diabetics in China is urgently needed

DISCUSSION

Self-Care Therapeutic Regimen for Type 2 Diabetes Mellitus Patients

Based on a review article, it is said that the self-care regimen for type 2 Diabetes Mellitus patients generally includes physical activity such as light exercise, diet, controlling blood glucose levels, monitoring blood glucose (SMBG), and medication. However, most of the respondents' compliance with self-care management behavior in type 2 Diabetes Mellitus (DM) patients has not been carried out optimally (Istiyawanti et al., 2019). The overall prevalence of adherence to self-care behaviors is still low. Self-efficacy, home blood glucose test, exercise per week, meal planning, dietary restriction, duration of diabetes, type of medication and description of appetite were significant variables related to adherence to self-care behavior (Oluma et al., 2020). Research by (Mogre et al., 2017) on adherence and factors related to self-care behavior in type 2 Diabetes Mellitus patients in Ghana states that adherence to diet, Self-Monitoring Blood Glucose (SMBG), and foot care very low. Self-care that is often done by type 2 DM patients is physical activity or light exercise. Only 1 patient did the SMBG routine every day. This low level of adherence is due to the low level of knowledge, in addition it may be that women need additional support to increase adherence to self-care behavior in type 2 DM patients.

Supporting factors

Research by (Chourdakis et al., 2014) stated that the self-care behavior of Diabetes Mellitus patients is closely related to social support. The higher the level of social support, the better the results about self-management. In addition, (Simon-Tuval et al., 2016)states that patients with type 2 diabetes consider the source of coping in diabetes mellitus management as self-acceptance to the disease, adherence to self-care, knowledge of the disease and support from various parties including nurses.

Obstacle factor

The inhibiting factor in the failure of type 2 DM patients to carry out self-care is due to the low level of knowledge(Mogre et al., 2017). Research by (Kassahun et al., 2016) also states that a significant number of DM patients have low levels of knowledge, poor self-care behavior and low levels of adherence to medication. This is also in accordance with research (Chourdakis et al., 2014) that physical exercise is more often done by men who are more educated and diagnosed earlier. Younger patients were less likely to follow their health

care professional's recommendations regarding diet, medication intake, blood glucose checks, foot care, and exercise compared to older patients. These results pose a higher risk of complications and morbidity in young patients with type 2 diabetes mellitus, who are likely to require intensive care in the future.

Lack of knowledge about diabetes and self-care is also found in patients with less than optimal blood glucose control (Zhou et al., 2013). In increasing patient awareness of the importance of the self-care domain for type 2 Diabetes Mellitus patients by strengthening the IEC program (Mariye et al., 2018).The development of effective educational strategies on understanding the importance of self-care by type 2 DM patients is very necessary (Zhou et al., 2013)

Psychospiritual Self-care Management

Long-term care that type 2 DM patients have to undergo is very difficult to control effectively, so it is necessary to pay attention to psychological and spiritual aspects in addition to physical aspects. (Kusnanto, 2012) research on self-care management-holistic psychospiritual care can improve affective and psychomotor cognitive, DM patients can be more independent in managing their illness.

Psychological aspects are important because beliefs in health, knowledge and behavior will have an effect on patients controlling their illness. The research of (Luthfa & Ardian, 2019) concluded that type 2 DM patients undergo a transition process from a healthy condition to an illness. The transition process begins with a cyclic loss response that predisposes the patient to self-control and self-care decisions. Self-control will make type 2 DM patients adapt and engage with new experiences from new habits. Self-care will facilitate type 2 DM patients in adapting to the internal and external environment and make type 2 DM patients have positive expectations in their lives.

Spiritual care aspects improve patient self-care, expectations, strength and quality of relationships (Gupta & Anandarajah, 2014). Spirituality has a fundamental role in having a positive effect on DM patients. The role of nurses in spiritual care consists of the quality of nurses, nursing interventions and nursing practice scenarios. The quality of nurses as capacity, understanding, calling and commitment to the provisions of spiritual care (Veloza-Gómez et al., 2017). For example, nurses perform wound care by paying attention to spiritual aspects that help type 2 DM patients to understand the patient's sense of honor, experience and value (Frouzandeh et al., 2015).

CONCLUSIONS

There was an influence of physical readiness, psychological readiness, material readiness on the offline learning readiness of the third-level students of the Nursing Study Program, University of Muhammadiyah Klaten. Physical readiness is the most dominant variable which influences the readiness of conducting offline learning.

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