

Self-Management And Life Quality Of Diabetes Mellitus Patients: A Literature Review

Erlin Kurnia

STIKES RS Baptis Kediri

Desi Natalia Trijayanti Idris

STIKES RS Baptis Kediri

Rahmat Aji Wibowo

STIKES RS Baptis Kediri

Alamat: Jl. Mayjend Panjaitan No. 3B Kediri 64102

Korespondensi penulis: idrisdede87@gmail.com*

Abstract. *Aim: Diabetes mellitus is a group of metabolic disorders characterized by increased blood glucose levels (hyperglycemia). Diabetic patients must carry out diabetes self-management to prevent complications and to achieve an optimal quality of life. Desain: Study Literature review Methods: Literature obtained from using PubMed, DOAJ, SINTA, and Google Scholar and 10 literature reviews were analyzed by PICO.*

Results: Research results from the 10 Literature Review obtained statistical test results with results $p = 0.00$ to $p = 0.003$ where $p < 0.05$ from Suciana, et al, (2019); Asnaniar and Safruddin (2019); Putri (2019); Luthfa and Fadhillah, (2019); Oktaviani dan Sofiani, (2019); Navicharern (2019) which means that there is a significant relationship between diabetes self-management and the life quality of diabetes mellitus patients.

Conclusion: If diabetes self-management is implemented well, the life quality of diabetes mellitus patients will be better.

Keywords: *Self-management, Quality of Life, Diabetes patients*

Abstrak. *Tujuan: Diabetes melitus merupakan sekelompok kelainan metabolisme yang ditandai dengan peningkatan kadar glukosa darah (hiperglikemia). Pasien diabetes harus melakukan manajemen mandiri diabetes untuk mencegah komplikasi dan mencapai kualitas hidup yang optimal. Desain: Kajian Tinjauan Pustaka Metode: Literatur diperoleh dari penggunaan PubMed, DOAJ, SINTA, dan Google Scholar dan 10 tinjauan literatur dianalisis dengan PICO. Hasil: Hasil penelitian dari 10 Literature Review diperoleh hasil uji statistik dengan hasil $p = 0,00$ sampai $p = 0,003$ dimana $p < 0,05$ dari Suciana, dkk, (2019); Asnaniar dan Safruddin (2019); Putri (2019); Luthfa dan Fadhillah, (2019); Oktaviani dan Sofiani, (2019); Navicharern (2019) yang berarti terdapat hubungan yang signifikan antara manajemen diri diabetes dengan kualitas hidup pasien diabetes melitus.*

Kesimpulan: Jika manajemen diri diabetes diterapkan dengan baik maka kualitas hidup pasien diabetes melitus akan lebih baik.

Kata Kunci: Manajemen diri, Kualitas Hidup, Penderita Diabetes

INTRODUCTION

Diabetes mellitus (DM) is a chronic disease caused by the failure of the pancreas to produce the hormone insulin adequately and cause an increase in blood glucose levels according to Aini (2016) are polyuria, polydipsia, and polyphagia, the three acute complications of diabetes mellitus are instability of blood glucose levels in the long term and time short with signs of low blood sugar, diabetic ketoacidosis (DKA) and an increase in blood sugar in the body that exceeds normal limits. Prolonged hyperglycemia can cause

complications of chronic kidney disease and neurological complications (Brunner & Suddarth, 2011), to manage their daily lives, and to reduce the impact of diabetes mellitus patients carrying out self-management (Suryadi & Wiwid, 2017).

According to the International Diabetes Federation 2017, Indonesia is ranked 6th in the world with diabetes mellitus with a total of 10.3 million. Diabetes is one of the 3rd largest deadly diseases in Indonesia with a percentage (6.7%)(Kemenkes, 2016). In 2018 in East Java the incidence of DM was at the age of > 60 years (61, 96%) (Risksdas, 2018). According to research by (Asnaniar dan Safruddin, 2019) that more than half of patients who have diabetes self-care management are less (57.9%).

Diabetes mellitus is a body condition where there is damage to pancreatic function which causes damage to secretion, when there is damage to insulin secretion it can cause an increase in blood sugar with signs of metabolic disorders due to hormonal disorders, which cause metabolic disorders, and can cause chronic complications in patients (Aini, 2016). Diabetes mellitus is classified into several types, type 1 diabetes and type 2 diabetes, secondary diabetes, and diabetes gestasional (Tarwoto, 2016). Type 2 diabetes mellitus that is not dependent on insulin, the cause is age > 65 years, unhealthy lifestyle and stress, irregular eating patterns, and obesity. Some complications of diabetes mellitus, namely acute complications (hypoglycemia, macrovascular disease, sensory nerve neuropathy), while chronic complications in diabetes mellitus include: nervous disorders, cataracts, kidney nephron disorders, proteinuria, coronary abnormalities, and gangrene (Margareth, 2019). To prevent complications from getting worse, diabetes mellitus patients with diabetes mellitus self-management include checking blood glucose levels regularly, nutrition, physical exercise, drug management, foot care (Rita, 2012). If self-care management of diabetes is carried out properly, the quality of life will be better and vice versa if self-care management is not carried out properly it will affect the quality of life (Asnaniar dan Safruddin, 2019).

Self-management of diabetes mellitus includes monitoring blood glucose levels, eating arrangements, namely how to control each food intake that will be consumed, diabetes mellitus patients must collaborate with doctors or nutritionists who will arrange eating arrangements, generally diets carried out by diabetic patients, namely: type of food and schedule, physical exercise in addition to aiming to maintain a healthy body, and improve insulin action, exercise can improve glyucose control (Kariadi, 2009). Aerobic diabetes patients do sports such as leisurely cycling, jogging, and swimming, drug management is very useful to overcome excessive insulin production and reduce insulin resistance, drug management is divided into two, namely oral and injection, foot care, diabetic feet must be well so that wounds do not

easily occur, and if diabetic feet have wounds and are not treated immediately it will result in gangrenous ulcers. Self-management is a person's ability to meet the needs of his daily life to reduce the complications he suffers, self-management itself is needed to improve the quality of life of patients with diabetes mellitus (Suryadi & Wiwid, 2017). Quality of life is a feeling of satisfaction and happiness so that people with diabetes can carry out daily activities independently, to achieve quality of life, diabetes mellitus patients must be able to maintain a healthy body (Prawesti, 2017). The domain of quality of life is described from four aspects, including: physical health, psychological, social relations, and the environment (Nursalam, 2013). Based on the above background, the researcher wants to conduct research on the relationship between self-management of diabetes mellitus and the quality of life of diabetes patients.

MATERIAL AND METHODS

Study desain: This review aims to find out and examine the literature (examine literature) whether there is a relationship between self-management of diabetes mellitus and the quality of life of patients with diabetes mellitus with a cross-sectional design.

The population: in this study are research journals published in the last 10 years. The online database sources used come from repositories either from Indonesia or from other countries that use Indonesian and English languages, among from SINTA, Pubmed, DOAJ and Google Scholar.

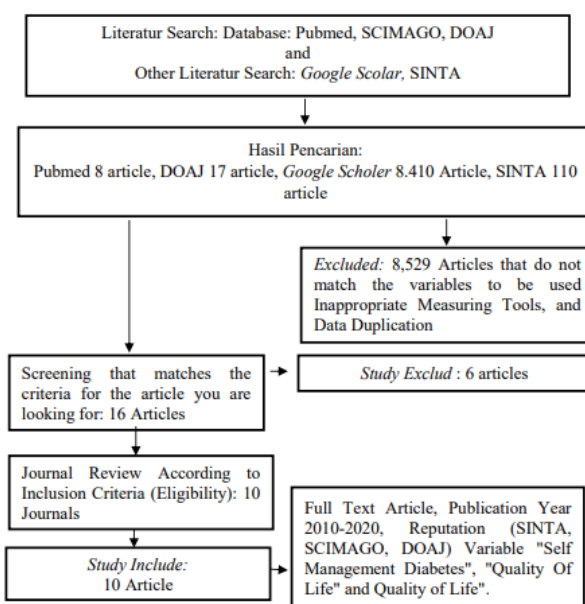
The inclusion criteria: This literature review include those that have been published with the Open Access Journal system, Type 2 diabetes patients measured by self-management and quality of life, journal manuscripts consisting of abstract and full text, articles in Indonesian and/or English, Indonesian journals indexed by SINTA, SCOPUS, DOAJ and Google Scholar. The number of references used in this literature review review are 10 journals, there are 2 highly reputable journals indexed by SCOPUS, 2 journals of moderate reputation indexed by SCOPUS, 3 journals of moderate reputation indexed by SINTA, 3 journals of low reputation indexed by Google Scholar.

RESULT AND DISSCUSION

Study Selection: Researchers got a total of 10 research articles according to the inclusion criteria. 10 research studies that meet the criteria include (Suciana et al, 2019); (Laili, 2017); (Oktaviani & Sofiani, 2019); (Sidiq et al, 2018); (Kueh et al, 2015); (Fadhilah, 2019); (Asnaniar dan Safruddin, 2019); (Putri, 2019); (Navicharem, 2012); (Maha et al, 2018).

Researchers carried out a literature search strategy with a search system using Indonesian and English using search strings and electronic database sources Google Scholar, DOAJ, SINTA, and Pubmed.

Characteristics based on the research design of 10 journals using a cross sectional design, namely to describe the relationship of Self Management on the quality of life of patients with diabetes mellitus. Characteristics based on sampling technique, 3 journals using purposive sampling, 3 journals using total sampling, 1 journal using consecutive sampling, 1 journal using convenience sampling, 1 journal using proportion estimation and 1 journal using random sampling. Characteristics based on measuring instruments in the study (questionnaire). For the self-management variable from 10 journals that have been analyzed, 1 article used a 5 pillar DM management questionnaire, 2 articles used a self-management questionnaire, 3 articles used a standardized questionnaire, namely DSMQ, and 4 articles used a standardized questionnaire, namely SDSCA, while for the quality of life variable, 10 2 articles used the WHOQOL questionnaire, 4 articles used the WHOQOL_BREEF questionnaire, 3 articles used the DQOL questionnaire and 1 journal used the SF-12 questionnaire.



Picture 1: Diagram Flow Chart Sintesa Literature Review

Tabel 1. Ekstraksi Data dengan Pendekatan PICO

Author	Objective	Methods	Research location	Population	Results
Suciana, dkk, (2019)	This study aims to determine the relationship between the management of the 5 pillars of DM with the quality of life of patients with diabetes mellitus	<i>cross sectional. The sample used were 49 samples, the sample technique used is proportion estimation</i>	Rumah Sakit Islam Klaten (Islamic Hospital, Klaten)	patients who suffer from DM, have received DM management, and are willing to be respondents	The results of the study obtained $p=0.003$, that there is a significant relationship between the management of the 5 pillars of type 2 diabetes with quality of life of diabetes patients.
Laili, (2017)	to identify the relationship between diabetes self-management variables and quality of life variables for type 2 diabetes patients	<i>cross sectional. A sample of 37 respondents with purposive sampling data collection techniques</i>	RS Amelia Pare Kediri (Amelia Hospital, Pare Kediri)	diabetes patients who came for medical check up at Outpatient Ward	It can be concluded that there is a relationship between diabetes self-management and quality of life
Oktaviani dan Sofiani (2019)	Identifying the Relationship between Self Management and Diabetes Quality of Life	<i>cross sectional. The number of samples is 176 respondents and uses the Pearson Correlation Test</i>	Rumah Sakit Umum Daerah Koja Jakarta Utara (Koja Hospital, North Jakarta)	all patients with diabetes who seek treatment at the Internal Polyclinic, the number of visits is 1890 in the period January-June 2019	the results of data analysis showed that there was a significant correlation (P value = 0.001) between Self Management and Quality of Life but with a weak correlation level ($r = 0.252$)
Sidiq et, al (2018)	to identify the effect of self-management in mediating the relationship between the activeness of diabetes mellitus patients in Prolanis with quality of life	<i>cross sectional. A sample of 52 respondents was calculated using total sampling. To assess patient activity using secondary data from the presence of prolanis participants</i>	Klinik Umum Meurasi Lambaro di Kabupaten Aceh Besar, Provinsi Aceh (Meurasi Lambaro General Clinic in Aceh Besar District, Aceh Province)	Diabetes patients	the results of data analysis showed that there was no correlation ($p=0.355$), which means that self-management with their quality of life.
Navichare m, (2012)	to examine the relationship between diabetes self-management, fasting blood sugar and quality of life in patients with diabetic foot ulcers	<i>cross sectional. Sampling technique: purposive sampling</i> <i>Sample size: 80 patients</i>	King Chulalongkorn Memorial Hospital, Bangkok, Thailand.	diabetic patients >18 years of age with type 1 and type 2 diabetes, can understand Thai, can read and fill out interview forms, and attend to the Hospital	Result showed that diabetes self-management had a significant relationship with quality of life ($r = 0.35$, $p < 0.05$)
Luthfa dan Fadhilah (2019)	to analyze the relationship of self-management with the quality of life of patients with diabetes mellitus	<i>cross sectional. the number of samples as many as 118 respondents.</i>	Puskesmas Bangetayu Semarang (Bangetayu Public Health Center, Semarang)	Respondents have suffered from DM for more than 6 months based on medical record numbers	the results of the p value 0.000 and $r 0.394$. There is a relationship between self management and the quality of life of patients with diabetes mellitus with a positive correlation direction
Asnaniar dan Safruddin (2019)	to analyze the relationship between self care and the quality of life of Type 2 Diabetes Mellitus patients	<i>cross sectional. The method uses total sampling, the number of respondents used is 38 people</i>	di Puskesmas Antang (Antang Public Health Center)	type 2 diabetes patients	Statistical test obtained p value (0.000) < value (0.05) there is a relationship between self care and quality of life in patients with diabetes mellitus in Antang

Author	Objective	Methods	Research location	Population	Results
					Makassar Public Health Center
Putri (2019)	to find out the relationship between Self Management and Quality of Life for Type 2 Diabetes Mellitus Patients	<i>cross sectional. The population in this research is the residents of Sonosewu hamlet who suffer from Diabetes mellitus</i>	Sonosewu Kasihan Bantul Yogyakarta (Sonosewu, Bantul, Yogyakarta)	diabetes patients	From the results of the study there was a significant relationship between self management and quality of life of patients with Type 2 diabetes patients, as evidenced (0.002) (<0.05)
Kueh et, al (2015)	to test a model that describes the relationship between diabetes knowledge, attitudes, self-management, and quality of life of people with T2DM	<i>Cross sectional.</i>	Alfred Hospital, Melbourne, Australia	Type 2 diabetes patients, age: 21-70 years old	self-management in terms of blood glucose testing was a significant predictor of the impact on quality of life, self-management in terms of diet was a significant predictor of satisfaction and impact on quality of life, and self-management in terms of exercise was a significant predictor of satisfaction in quality of life
Maha et, al (2018)	to assess health-related quality of life (HRQOL) among adult patients with diabetes attending a primary health care diabetes clinic in Kuwait and to examine factors associated with HRQOL of diabetic patients.	<i>cross sectional. Sampling technique: random sampling: 503 patients</i>	26 primary clinic in Kuwait	patients with diabetes attending 26 primary health care diabetes clinics in Kuwait	Multivariate analysis revealed a significant direct relationship between DSM and primary health composites and better MHC scores skor

Identifying Self Management based on the results of a literature review

Based on the results of various literature review studies obtained, from 10 literature review journals there are journals that state that diabetes self-management is good including Suciana, (2019); Laili, (2017); Sofiani, (2019); Fadhilah, (2019); Navicharem, (2012). Of the 10 literature review journals, self management conducted by type 2 DM patients includes drug management, diet control management, foot hygiene and care, self-monitoring, and physical exercise as evidenced by research conducted by Navicharem, (2012); whereas according to the results of research by Kueh et al, (2015), diabetic patients make arrangements for eating, exercising, checking blood sugar, and taking care of diabetic feet.

From 10 literature review journals, Suciana, (2019) uses a questionnaire on the management of 5 pillars of DM control; Laili, (2017) using self management; Sofiani, (2019); Fadhilah, (2019) using a diabetes self management questionnaire (DSMQ); Sidiq et al, (2018) used a self-management questionnaire; Kueh et al, (2015), Summary of Diabetes Self-Care

Activities (SDSCA) (indicators: diet, exercise, blood glucose test and foot care); Asnaniar dan Safruddin, (2019) and Putri, (2019) using the SDSCA diabetes questionnaire (The Summary Of Diabetes Self-Care Activities); Navicharem, (2012) using the Diabetes Self-Care Activity Summary (SDSCA) (5 indicators: medication, diet control, foot care, self-monitoring, physical exercise); Maha et al, (2018) used the Diabetes Self-Management Questionnaire (DSMQ).

According to the results of research by (Fadhilah, 2019), almost all respondents have self-management in a good category. Self-management itself is a way of managing someone to optimize their health status. The term self-management refers to the task of each individual having to try to live a better life even with chronic conditions (Oktaviani & Sofiani, 2019). people with type 2 diabetes must carry out self-care properly to improve their health, patients can take care of themselves through maintaining a good diet, doing sports activities by regularly taking medicine as recommended by a doctor, doing foot care after bathing.

The results of the study by (Sidiq et al, 2018) that poor self-management conditions were found in the 45-60 age group as many as 17 people (58.6%), 15 women (57.7%) and found in the prolanis group after 1- 2 years as many as 22 people (61.1%). According to (Tandra, 2017) Type 2 diabetes often occurs at the age of over 40 years, and type 2 DM occurs over the age of 20 years. The pancreas can still produce insulin but the quality of insulin produced is not optimal, according to (Fadhilah, 2019) Women who are most at risk of developing DM are women because women have one component of insulin resistance which will increase during pregnancy. suffering from diabetes mellitus patients carry out self-management (Suryadi & Wiwid, 2017).

Diabetes mellitus is a complication that arises due to an increase in blood sugar levels, which are at greatest risk of developing diabetes are women because one component causes insulin production to increase when women are pregnant. To prevent these complications, patients with diabetes mellitus are recommended to carry out self-management of diabetes.

Identifying the Quality of Life of Diabetes Mellitus Patients based on the results of a literature review

From 10 literature review journals, there are 4 journals that mention the quality of life of diabetic patients, including (Laili, 2017); (Sidiq et al, 2018); (Fadhilah, 2019); (Putri, 2019); (Kueh et al, 2015); 4 journals mention adequate quality of life for diabetes, including (Oktaviani & Sofiani, 2019); (Maha et al, 2018); (Putri, 2019); (Navicharem, 2012); and 2 journals mention the poor quality of life of diabetic patients including (Suciana et al, 2019); (Asnaniar dan Safruddin, 2019).

Based on journals, there are 4 domains of quality of life including physical health, psychological health, social and environmental relationships, this is in accordance with research conducted by (Oktaviani & Sofiani, 2019); (Navicharem, 2012); while the results of research by (Maha et al, 2018) used composite indicators of physical health (PHC) and composite mental health (MHC).

The measuring instrument used from 10 literature review journals is that (Suciana et al, 2019) uses a quality of life questionnaire using the WHOQOL; (Laili, 2017) and (Oktaviani & Sofiani, 2019) using the WHOQOL BREF questionnaire; (Sidiq et al, 2018) used the WHOQOL-BREF questionnaire; (Kueh et al, 2015) used the Diabetes Quality of Life (DQOL) questionnaire (2 indicators: impact and satisfaction); (Fadhilah, 2019) questionnaire using the WHOQOL-BREEF quality of life; (Asnaniar dan Safruddin, 2019) using the Diabetes Quality of Life (DQOL) questionnaire; (Putri, 2019) Instruments used are Diabetes Quality of Life (DQOL); (Navicharem, 2012) using the WHO BRIEF Quality of Life Diabetes questionnaire (4 domains: physical health, psychosocial health, social relationships, and the environment); (Maha et al, 2018) used the SF-12 questionnaire (2 domains: composite physical health (PHC) and composite mental health (MHC)).

The results of the research by (Sidiq et al, 2018) that the majority of respondents who have a good quality of life are 40-60 years old. Family support is needed with diabetes to maintain their quality of life, family involvement in diabetes management to optimize their quality of life (Rahayu et al, 2018). Diabetic patients at the age of 60 years, need to involve the family. Family involvement is very important in the management of diabetic patients, good family support given to people with diabetes can strengthen in maintaining the quality of life of diabetic patients.

The results of (Navicharem, 2012) from 83 respondents found that the quality of life of diabetes mellitus in physical health got a score of 54 (67.5%) in the moderate category; psychosocial health got a score of 54 (67.5%) in the moderate category; social relations got a score of 53 (66.3%) in the medium category; environment got a score of 59 (73.8%) in the medium category.

According to (Laili, 2017) quality of life is an individual's assessment of the individual's position in life, in the context of the culture and value system in which the individual lives in relation to individual goals, expectations, standards and what concerns the individual.

Various problems experienced by people with diabetes mellitus in the process of life that can affect the quality of life. There are aspects that can affect the quality of life of diabetes mellitus, including special needs that are continuously in the process of treating diabetes

mellitus, when blood sugar levels increase, it will cause symptoms that can make the condition worse, even to the possibility of complications from diabetes mellitus and sexual dysfunction. This is based on what was stated by (Yudianto et al, 2008) in his research.

Based on this, the quality of life is an important factor that can change a person's health condition, including patients with diabetes mellitus. So that all patients with diabetes mellitus continue to be motivated to improve their quality of life physically, psychologically, socially and environmentally.

Self Management with Quality of Life of Diabetes Mellitus Patients based on the results of a literature review

The results of the literature review studies that have been obtained from 10 journals show that there is a relationship between Diabetes Mellitus Self Management and the Quality of Life of Diabetes Mellitus Patients as evidenced by the p value with a range of 0.000 to 0.003 where $p < 0.05$ means that there is a significant relationship between Diabetes Mellitus Self Management and Quality of Life for Diabetes Mellitus Patients, including research ((Suciana et al, 2019), (2019); (Oktaviani & Sofiani, 2019); (Fadhilah, 2019); (Asnanian dan Safruddin, 2019); (Putri, 2019); (Navicharem, 2012); (Kueh et al, 2015); and (Maha et al, 2018)).

Based on the results of the literature review that has been obtained, there is a significant relationship between self-management of diabetes mellitus and the quality of life of diabetes mellitus as evidenced by various studies that have been published internationally and nationally.

Self management is a person's efforts to control the condition, where in self management itself there are medication management, exercise, diet, regular blood sugar control, foot care. Patients with diabetes mellitus are recommended to carry out self-management because it aims to improve the quality of life for people with diabetes.

CONCLUSION

From the results of the research in the form of a literature review, it can be concluded that Self Management of Diabetes Mellitus in Diabetes Mellitus which was obtained based on the literature review, the results of 5 journals said it was good, the quality of life in diabetes mellitus patients based on the literature review showed that 4 journals said it was sufficient and the relationship of Self Management Diabetes Mellitus on the Quality of Life of Diabetes Mellitus Patients from the conclusions of 8 literature review journals, it was found that there was a significant relationship between DM Self Management on the Quality of Life of Diabetes Mellitus Patients.

SUGGESTION

Nursing and Hospitals recommend that effective Diabetes Mellitus Self Management can optimize the Quality of Life of Diabetes Mellitus Patients, for researchers Furthermore, it is recommended that further researchers pay attention to every indicator in measuring Diabetes Mellitus Self Management and Quality of Life of Diabetes Mellitus patients, and for nursing science The results of this study can be used as a reference in implementing Diabetes Mellitus Self Management to improve the Quality of Life of Diabetes Mellitus Patients.

REFERENCE

- Aini (2016) Asuhan Keperawatan pada Sistem Endokrin dengan pendekatan NANDA NIC NOC. Jakarta: Salemba Medika.
- Asnaniar dan Safruddin (2019) Hubungan Self Care Management Diabetes dengan Kualitas Hidup Pasien Diabetes Mellitus Tipe. Universitas Muslim Indonesia.
- Fadhilah, L. dan (2019) 'Self Management Menentukan Kualitas Hidup Pasien Diabetes Mellitus', *Jurnal Endurance*, 4(2), p. 402. doi: 10.22216/jen.v4i2.4026.
- Kariadi, S. H. (2009) Panduan Lengkap Untuk Diabetisi, Keluarganya, dan Profesional Medis. Jakarta: Mizan Media Utama.
- Kemenkes (2016) Mari Kita Cegah Diabetes Dengan Cerdik.
- Kueh et al (2015) 'Modelling of diabetes knowledge, attitudes, self-management, and quality of life: a cross-sectional study with an Australian sample', *Health and Quality of Life Outcomes*, pp. 2–11.
- Laili (2017) Hubungan Diabetes Self-Management Dengan Kualitas Hidup Pasien Diabetes Mellitus Tipe 2 di RS Amelia Pare Kediri. STIKES Karya Husada Kediri.
- Maha et al (2018) 'Diabetes Self-Management: A Key to Better Health-Related Quality of Life in Patients with Diabetes', *Medical Principles and Practice*, 27(4). doi: 10.1159/000489310.
- Margareth, R. & (2019) Asuhan Keperawatan Medikal Bedah dan Penyakit Dalam. Yogyakarta. Yogyakarta: Nuha Medika.
- Navicharem (2012) 'Diabetes Self-Management, Fasting Blood Sugar and Quality of Life among Type 2 Diabetic Patients with Foot Ulcers', *Journal of the Medical Association of Thailand = Chotmaihet thangphaet*, 95(2), p. 156. Available at: <https://pubmed.ncbi.nlm.nih.gov/22435243/>.
- Nursalam (2013) Metodologi Penelitian Ilmu Keperawatan Pendekatan Praktis Edisi 3. Jakarta: Salemba Medika.

- Oktaviani & Sofiani (2019) Hubungan Self Management Dengan Kualitas Hidup Diabetisi Di Poliklinik Penyakit Dalam Rumah Sakit Umum Daerah Koja Jakarta Utara Tahun 2019. Universitas Muhammadiyah Jakarta.
- Prawesti, K. dan (2017) Senam Kaki bagi Pasien Diabetes Meliitus. Nganjuk: Adjie Media Nusantara.
- Putri (2019) Hubungan Antara Self Management Dan Kualitas Hidup Pasien Diabetes Melitus Type 2. Akper “YKY” Yogyakarta”.
- Rahayu et al (2018) ‘Determinants of selfcare management in patients with type 2 diabetes mellitus’, *Jurnal Keperawatan Kesehatan*, 13(2), pp. 71–76.
- Riskesdas (2018) ‘Hasil utama riskesdas 2018 provinsi jawa timur’.
- Rita (2012) *Nurse’s Guide To Teaching Diabetes Self-Management*. New York: LLC.
- Sidiq et al (2018) ‘Self-management ability mediates the relationship of diabetes mellitus patients’ activeness in prolanis with their quality of life’, *Journal Diabetes Management*, 8(6), pp. 147–153. Available at: <file:///C:/Users/PC/Downloads/self-management-ability-mediates-the-relationship-of-diabetes-mellitus-patients-activeness-in-prolanis-with-their-qualit.pdf>.
- Suciana et al (2019) ‘Penatalaksanaan 5 Pilar Pengendalian Diabetes Melitus terhadap Kualitas Hidup Pasien Diabetes Melitus Tipe 2’, *Jurnal Ilmiah Permas*, 9(4). Available at: <https://journal.stikeskendal.ac.id/index.php/PSKM/article/view/587>.
- Suryadi & Wiwid (2017) Hubungan Self Management Dengan Kualitasi Hidup Pasien Diabetes Melitus Di Rumah Sakit Tk. II dr. Soepraoen Malang. Universitas Malang.
- Tandra (2017) *Segala Sesuatu Yang Harus Anda Ketahui Tentang Diabetes*. Jakarta: Gramedia Pustaka Utama.
- Tarwoto (2016) *Keperawatan Medikal Bedah Gangguan Sistem Endokrin*. Jakarta: CV. Trans Info Media.
- Yudianto et al (2008) ‘Kualitas Hidup Penderita Diabetes Melitus Di Rumah Sakit Umum Daerah Cianjur’, *Jurnal Keperawatan*.