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Predictors that affect the Quality of Life Patient with Diabetes Mellitus: A Systematic Review

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Abstract

BACKGROUND: Diabetes mellitus is a disease that has received worldwide attention because its incidence continues to increase so that more research is needed, especially regarding the quality of life of diabetes mellitus patients considering that quality of life is one of the targets of diabetes mellitus management therapy.

AIM: The purpose of the literature review is to review the factors that affect the quality of life of diabetes mellitus patients.

METHOD: Literature reviews are conducted based on issues, methodologies, equations, and further research proposals.

RESULTS: There is an influence of sociodemographic factors and behavioral factors of self-care activities on the quality of life of diabetes mellitus patients.

CONCLUSION: Sociodemographic factors and behavioral factors of self-care activities affect the quality of life of patients with diabetes mellitus.

Background

Diabetes mellitus is a disease that has received worldwide attention because its incidence continues to increase. Based on data from the International Diabetes Federation, the number of diabetes mellitus sufferers was 387 million people in 2014 increasing to 415 million people in 2015 and is expected to increase to 642 million people in 2040 [1].

According to the WHO, the global prevalence of diabetes mellitus in adults over the age of 18 experienced an increase from 4.7% in 1980 to 8.5% in 2014. Based on this number, Indonesia ranks 5th largest in the world [2]. The report from the Agency for Health Research and Development with the results of Basic Health Research in 2013 stated that there was an increase in prevalence in people with diabetes mellitus based on interviews, from 1.1% in 2007 to 1.5% [3]. Then, according to RISKESDAS data 2018, there was an increase in prevalence in people with diabetes mellitus from 6.9 in 2013 to 8.5% in 2018 [3].

Diabetes mellitus is a group of metabolic diseases with hyperglycemia characteristics that occur due to abnormalities in insulin secretion, insulin action, or both [4]. According to research, there are several factors that encourage the need to measure the quality of life of patients with type 2 diabetes, namely, the prevalence of diabetes mellitus which continues to increase both in the world and in Indonesia. Many studies have raised about diabetes so that more research is needed, especially regarding the quality of life of diabetes mellitus patients, considering that quality of life is one of the targets of diabetes mellitus management therapy [4].

Quality of life should be an important concern for health professionals because it can be used as a reference for the success of an intervention or therapy [5]. Diabetes mellitus suffered will accompany the patient's life so that it can affect a person's quality of life, If not treated properly, it can cause complications in organs such as the eyes, heart, blood vessels, and nerves that will affect a person's quality of life. Low quality of life can worsen complications and end

in death [6]. Based on the problems above, there are many studies on the factors that affect the quality of life of patients with diabetes mellitus. The research was taken for analysis through a literature review.

Methods

Research design

The research was conducted using a systematic review method examines various research reports published in journals with the same focus.

Identification of problems

Problem identification is the process of identifying or inventorying problems. The research problem is something that is important among other processes, because it determines the quality of a research. During the problem formulation process, it helps identify the search terms or keywords used in the literature review.

Searching the Literature

The search was carried out using the PICO technique, PRISMA flow literature. Articles were searched using the Biomedcentral, Plos, Elsevier, Scientdirect, and SJST databases. Formulation of search strategy, which includes inclusion, exclusion criteria, keywords and selection of research reports. The inclusion criteria used in this study were the time span of the 2016-2020 journal publication year, research journals related to the research focus. The keywords used were "Quality of life and Diabetes mellitus and factors affecting".

Critical Appraisal

The next step is an in-depth assessment of the selected studies so that journals that do not meet the inclusion criteria or journals that enter the exclusion criteria are research journals with problem topics not related to complementary therapy in hypertension and review article reviews.

Data Extraction

Data extraction is the step in which all relevant findings that meet the selection criteria are collected to form a body of evidence regarding the research question posed.

Data Synthesis

Data synthesis is the stage in the review process when studies that meet the inclusion criteria are summarized to form the results of a systematic review. The purpose of data synthesis was to collect study findings for all studies that met the inclusion criteria; assess the strength of research findings using agreed assessment criteria; and to summarize the results in a systematic and evidence-based literature review document.

Results

Search was conducted using the PICO technique, PRISMA flow literature. Articles were searched using BioMed Central, Plos, Elsevier, Science Direct, and SJST databases. The results of the review of screening articles through inclusion and exclusion criteria were found to be seven research articles (Table 1). A search using BioMed Central keywords 1, namely, quality of life, diabetes mellitus, and factors affecting found 115 articles. A search using the Plos database found 177 articles. A search using Elsevier found data of 3200 articles, and a search using ScienceDirect found data of 715 articles. To search using the SJST database, 213 articles were found. A total of 1551 articles were identified from the selected database. After screening full text, fulfill the requirements, multiple publications with inclusion and exclusion criteria as follows: Inclusion criteria are research conducted in a clinical environment, research with accredited journals, open access, full text, and publications in 2016–2020, while the exclusion criteria are Indonesian language articles, literature review, systematic review, and RCT (Figure 1).
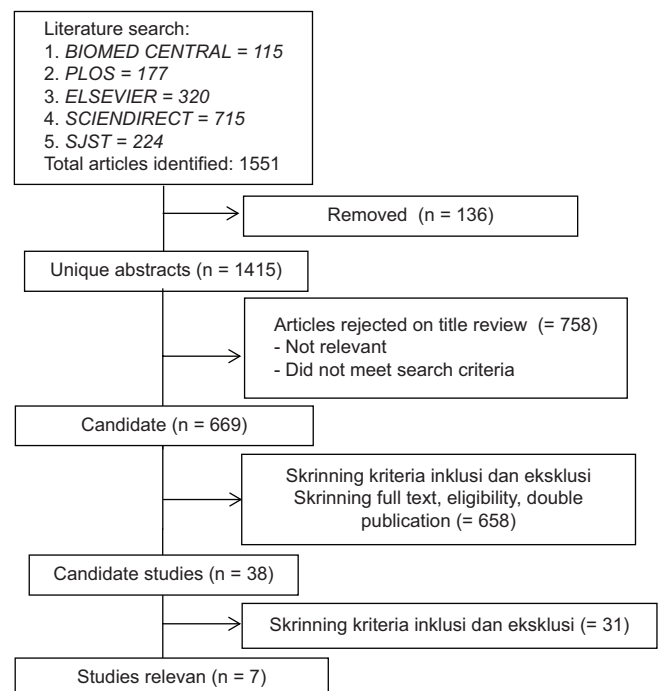

Figure 1: PRISMA flow literature

Table 1: Results review

Author	Method	Title and Instrument	Results
Godfrey Mutashambara Rwegerera, Thato Moshomo, Marea Gaenamong, Taibat Aderonke Oyewo, Sivasomnath Gollakota, Yordanka Piña Rivera, Anthony Masaka, Brian Go diabetes mellitusan, Meshack Shimwela, Dereje Habte [7]	Cross-sectional	Health-related quality of life and associated factors among patients with diabetes mellitus in Botswana Medical Outcome Study (MOS) Short forms (SF-36, SF-20, and SF-12)	The majority of patients were women with no formal education or basic education. The mean HbA1c was 7.97% (SD: 2.02) and most of the patients had poor glycemic control. The majority had a poorer physical composite score (PCS-12) and a mental composite score (MCS-12), with the proportion of both being worse. Female gender, older age 65 years, and the presence of three or more documented diabetes complications were associated with significantly worse PCS-12. The presence of two diabetes complications, three or more diabetes complications, and musculoskeletal disease MCS a significant
Ye Zhuang, Qing Hua Ma, Chen Wei Pan, Jun Lu [8]	The cross-sectional study	Health-related quality of life in older Chinese patients with diabetes. EQ5D is a widely used instrument based on utility, and its validity and reliability have been established	A total of 220 cases and 440 controls were included. The mean age of the participants was 68.8 years and women accounted for 69.1% of the study sample. The EQ-5D-3L index score was lower for parents with T2D (0.886) than for their controls (0.955). After multivariable adjustment, the difference in the ED-5D-3L index score between the elderly with and without T2D was 0.072. In logistic regression analysis, T2D was positively associated with reporting problems with mobility (odds ratio [OR] = 5.00); pain/discomfort (OR = 1.66), and anxiety/depression (OR = 3.2).
Jessie N. Zurita-Cruz, Leticia Manuel Apolinar, María Luisa Arellano-Flores, Alejandro Gutierrez Gonzalez, Alma Gloria Najera Ahumada and Nelly Cisneros-González [9]	Cross-sectional study	Health and quality of life outcomes impairment of quality of life in type 2 diabetes mellitus: A cross-sectional study quality of life was measured by a health-related (HRQoL), 36-item Short-Form Survey (SF-36)	Among the 1394 included patients age, mean global HRQoL has a median of 50.1 points. Bivariate analysis showed that age, marital status, gender, occupation, comorbidities, duration of diabetes mellitus 2, and comorbidities affected HRQoL
Diena M. Almasri, Ahmad O. Noor, Ragia H. Ghoneim, Alaa A. Bagalagel, Mansour Almetwazi, Nujud A Baghlaf, Esraa A. Hamd [5]	Cross-sectional study	The impact of diabetes mellitus on health-related quality of life in Saudi Arabia. The patients' QOL were assessed using EQ-5D-5L Arabic version.	A total of 131 participants were included in the study with a median age of 55 years. Forty-five percent of the participants were men. Regarding EQ-5D scores, there were significant correlations with gender, exercise, hypertension, heart disease, marital status, education level, and duration of diabetes while there were significant differences in EQ-VAS scores with respect to heart disease, education level and diabetes duration.
Tassana Choowattanapakorn, Rattanaporn Karuna, Suchada Konghan 3, and Duanpen Tangmettajittakun [6]	Cross-sectional study	Factors predicting quality of life in older people with diabetes in Thailand Quality of life: The short form of the HRQoL scale (SF-36 v2)	Behavior moderate self-esteem (38.12, SD = 7.363), and low mental and physical quality of life scores (47.60, SD = 8.938; 45.78, SD = 8.963, respectively). Five variables of age, resilience, self-care behavior, education, and gender were found to be correlated with quality of life (r = 0.428); they accounted for 18.3% of the findings for physical quality of life (R 2 = 0.183, p < 0.05)
Zeinab Jannoo, Yap Bee Wah, Alias Mohd Lazim, Mohamed Azmi Hassali [10]	Cross-sectional study	Examining diabetes distress, medication adherence, diabetes self-care activities, diabetes-specific quality of life, and health-related quality of life among type 2 diabetes mellitus patients Five instruments were used, (1) Areas Problems on the Diabetes Scale (PAID); (2) Audit item Diabetes Dependent Quality of Life-19 (ADDQoL-19); (3) Morisky Medication Adherence Scale (MMAS); (4) Diabetes Self-Care Activity Summary (SDSCA), and (5) Short-Form 36 (SF-36).	Values of several fit indices indicate that the proposed model provides a good fit for the data. SEM results show that medication adherence (MMAS) has a significant direct effect on diabetes distress (PAID) (Beta) = 0.20). Self-care activity construct (SDSCA) was significantly associated with PAID (Beta = 0.24). SDSCA was found to have a significant relationship with HRQoL (SF-36) (Beta = 0.11). In addition, diabetes disorders had a significant effect (Beta = 0.11) on HRQoL patient. Finally, ADDQoL had a significant effect on HRQoL (Beta = 0.12)
Biruk Shalmeno Tusa, Bisrat Misganaw Geremew 2 and Mekuriaw Alemayehu Tefera [11]	A cross-sectional comparative study	Heath-related quality of life and associated factors among adults with and without diabetes in Adama city, East Shewa, Ethiopia, 2019; using generalized structural equation modeling. The World Health Organization Quality of Life Instrument (WHOQoL-Brief)	The diabetes group had significantly lower mean scores across all HRQoL domains than the non-diabetic group (p < 0.0001). Depression had a direct negative effect on all HRQoL domains in both groups. Fasting blood sugar also had a direct negative effect on all HRQoL domains except social relationships. Complications of diabetes mellitus have a direct negative impact on physical and psychological health. Low medication adherence and poor diabetes self-care activities have direct, indirect and total negative effects on physical and environmental health through fasting blood sugar

Discussion

Emphasis on issues raised for research

Tassana Research [6], Diena M. Almasri [5], Godfrey Mutashambara [7], Biruk Shalmeno [11], Zeinab Jannoo [10], Zurita [9], and Ye Zhuang [8], all of which have a basic problem of diabetes mellitus whose prevalence and factors that affect the quality of life of diabetes mellitus patients are a problem faced by families and intervention providers to reduce the incidence of diabetes mellitus. Lifestyle is one of the means to control diabetes mellitus. A special screening program for early diabetes detection is pivotal to prevent complications in the study.

Tassana Research [6], Diena M. Almasri [5], Godfrey Mutashambara [7], Biruk Shalmeno [11], Zeinab Jannoo [10], Zurita [9], and Ye Zhuang [8], which have been carried out, have mentioned factors that affect the quality of life of diabetes mellitus patients.

Research steps or research methods used

The research design is a descriptive cross-sectional study conducted by Tassana [6], Diena M. Almasri [5], Godfrey Mutashambara [7], Zeinab Jannoo [10], Zurita (2018), and Ye Zhuang [8], other studies are Biruk Shalmeno [11] used a cross-sectional comparative study.

The selection of research samples used more cross-sectional study samples. Godfrey Mutashambara's research uses the Medical outcome study (MOS) Short-Form General Health Survey instrument [7], Ye Zhuang's research [8] using the EQ5D instrument is an instrument that is widely used

based on utility, and its validity and reliability have been established, Zurita's research [9] uses perceived quality of life instrument measured by the health-related quality of life scale (HRQoL), 36-item Short-Form Survey (SF-36), research Diena M. Almasri [5] using different clinical and social instruments on patients' quality of life diabetes (QOL) was assessed using the Arabic version of the EQ-5D-5L, Tassana's research used instruments to measure characteristics, quality of life [6], resilience, and self-care behavior, Zeinab Jannoo's research [10] used five instruments, (1) Areas Problems in Diabetes Scale (PAID); (2) Audit item Diabetes Dependent Quality of Life-19 (ADDQoL-19); (3) Morisky Medication Adherence Scale (MMAS); (4) Summary of Diabetes Self-Care Activities (SDSCA), and (5) Short-Form 36 (SF-36), and Biruk Shalmeno's [11], [12], [13] research using the World Health Organization quality of life (WHOQoL-Brief) instrument which is validated and widely used in Ethiopia.

In general, these seven studies assessed the predictors that affect the quality of life of diabetes mellitus patients. Diabetes mellitus patients should be advised and encouraged to have high medication adherence so that they will be less stressed and experience a better quality of life. Diabetic self-care activities should also be emphasized as it lowers diabetes pressure and improves overall quality of life.

As expected, a better diabetes-specific quality of life leads to a better health-related quality of life. All of these studies are applicable to diabetes mellitus disease and can be replicated to assess factors that may affect patient health outcomes. In general, diabetes mellitus patients have an inadequate quality of life.

Predictors associated with quality of life, especially in older patients, showed that were worse than controls from the general population. Health workers are encouraged to play an active role in guiding their patients to comply with medication and better self-care activities.

Effective intervention by health-care providers is important to encourage and assist diabetes mellitus patients in improving their quality of life throughout life and overcoming this debilitating disease.

Conclusion

Based on the analysis of the seven articles, it can be concluded that adults with diabetes have a poor quality of life. Sociodemographic factors and behavioral factors of diabetes self-care activities affects quality of life of patients with diabetes mellitus. Thus, it is recommended to integrate screening for depression and provide counseling about medication adherence and diabetes self-care activities along with existing diabetes mellitus treatment.

Suggestions

Health workers with families and the elderly can make efforts to prevent diabetes mellitus.

Further research can examine the predictors that affect the quality of life of a person's diabetes mellitus patient. Low quality of life can worsen complications and end in death. Based on the problems above, there are many studies on the factors that affect the quality of life of patients with diabetes mellitus. The research was taken for analysis through a literature review.

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