Relationship between self-efficacy with self-management and quality of life among Type 2 Diabetes Mellitus: A systematic review

Relación entre la autoeficacia con el automanejo y la calidad de vida en diabetes mellitus tipo 2: una revisión sistemática

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SUMMARY

Objective: *Self-efficacy is one aspect predicted to influence the self-management of type 2 Diabetes Mellitus (DM) patients. Low self-efficacy will impact DM patients' motivation to carry out self-care, causing uncontrolled blood glucose levels and decreasing the quality of life. This study aimed to determine the relationship between self-efficacy, self-management, and quality of life in type 2 DM patients using a systematic review.*

Materials and Methods: *The study design used was a systematic review. A literature search was conducted on databases such as Scopus, Web of Science, PubMed, and EBSCOhost (CINAHL) with the keywords "self-efficacy," "type 2 diabetes," "self-management," and "quality of life." Nine texts meet the inclusion criteria, including population, namely, type 2 DM patients; exposure: self-efficacy; the output was diabetes self-management, and the quality of life of type 2 DM patients, and the study type was cross-sectional.*

Results: *The results showed that there was a relationship between self-efficacy and diabetes self-management, with patients who have high self-efficacy showing greater adherence to diabetes self-management. Furthermore, there was a relationship between self-efficacy and quality of life: where self-efficacy increases, the quality of life for type 2 DM patients also increases.*

Conclusions: *Self-efficacy is needed in diabetes self-management to improve the quality of life of type 2 DM patients. Health professionals need to continue implementing several strategies to increase patient confidence and confidence in diabetes management to increase the quality of life of type 2 DM patients.*

Keywords: *Self-efficacy, self-management, quality of life, type 2 diabetes.*

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RESUMEN

Objetivo: *La autoeficacia es un aspecto que se prevé influirá en el automanejo de los pacientes con Diabetes Mellitus (DM) tipo 2. La baja autoeficacia impactará en la motivación de los pacientes con DM para llevar a cabo el autocuidado, causando niveles de glucosa en sangre descontrolados y disminuyendo la calidad de vida. Este estudio tuvo como objetivo determinar la relación entre la autoeficacia, el automanejo y la*

calidad de vida en pacientes con DM tipo 2.

Materiales y Métodos: *El diseño del estudio utilizado fue una revisión sistemática. Se realizó una búsqueda bibliográfica en bases de datos como Scopus, Web of Science, PubMed y EBSCOhost (CINAHL) con las palabras clave "autoeficacia", "diabetes tipo 2", "autogestión" y "calidad de vida". Nueve textos cumplen con los criterios de inclusión, entre ellos: población, es decir, pacientes con DM tipo 2; exposición: autoeficacia; el resultado es el autocontrol de la diabetes y la calidad de vida de los pacientes con DM tipo 2 y el tipo de estudio es un estudio transversal.*

Resultados: *Los resultados mostraron que existe una relación entre la autoeficacia y el automanejo de la diabetes, siendo los pacientes que tienen autoeficacia alta los que muestran mayor adherencia al automanejo de la diabetes. Además, existe una relación entre la autoeficacia y la calidad de vida, donde aumenta la autoeficacia, también aumenta la calidad de vida de los pacientes con DM tipo 2.*

Conclusiones: *Es necesaria la autoeficacia en el autocontrol de la diabetes para que pueda mejorar la calidad de vida de los pacientes con DM tipo 2. Los profesionales de la salud deben continuar implementando varias estrategias para aumentar la confianza del paciente y la confianza en el control de la diabetes para aumentar la calidad de vida de los pacientes con DM tipo 2.*

Palabras clave: *Autoeficacia, automanejo, calidad de vida, diabetes tipo 2.*

INTRODUCTION

Diabetes Mellitus (DM) is one of the most common chronic diseases and the most significant health problem in many countries (1). If the blood glucose levels rise out of control, it can lead to several problems that can affect the patient's comfort and quality of life (2). In 2016, the World Health Organization (WHO) mentioned that DM is a long-term metabolic disease marked by high blood glucose levels that damage the heart, blood vessels, eyes, kidneys, nerves, and nerve endings. DM is one of the leading causes of death worldwide, with around 1.5 million yearly deaths. The number of DM patients worldwide for 2021 is 537 million and is predicted to increase to 643 million in 2030 and 783 million in 2045 (3). One of the study's findings was that people with DM have a life expectancy of 4-8 years shorter than those without the disease (4). Therefore, DM patients need adequate management by

maximizing self-efficacy and abilities that exist themselves.

Self-efficacy is an individual's belief in his ability to display activities that affect his life, which is related to his ability to do self-care (5). A study reported that 63.9 % of type 2 DM patients showed less self-efficacy in DM management (6), while another study showed that the majority of type 2 DM patients have an adequate (64.9 %), low (10.4 %), and high (24.7 %) quality of life (7). Some of these problems show how important it is for type 2 DM patients to improve their self-management and quality of life by building their self-efficacy.

Type 2 DM patients need good adherence to self-management of diabetes, but sometimes patients are unsure of their ability to carry out self-care. This fits with a previous study which indicates that a person's self-efficacy is insufficient after being diagnosed with DM and having complications (8). Another point of view explains that everyday DM patients have to perform self-care tasks that are difficult for them and burden patients, thus affecting their self-efficacy (9). Also, it was shown that type 2 DM patients often don't stick to their diets because they don't understand, and they use things like self-efficacy, motivation, knowledge, practical goals, and social support, which help people take care of themselves (10). Furthermore, self-efficacy is indirectly related to self-management through efforts to overcome obstacles, commitment to a therapeutic regimen, and persistence in following a self-management plan (11).

Evidence indicated that self-efficacy influences self-management and quality of life in type 2 diabetes patients, helping people with type 2 diabetes to take better care of themselves (12). Self-efficacy also positively affects self-management and the quality of life of people with type 2 diabetes (6,13). However, low self-efficacy makes people with type 2 diabetes less likely to take care of themselves, having a lower quality of life if they didn't think they could do things well (14).

Previous research shows a relationship between self-efficacy and DM self-management (12,15-17). Self-efficacy affects self-management, especially when giving insulin injections, taking medications as prescribed, and checking blood

glucose levels independently (18). Another point of view indicates that when people with type 2 diabetes have low self-efficacy, they don't feel confident in their ability to care for themselves, leading to complications (19). Furthermore, several studies show a relationship between self-efficacy and quality of life in type 2 DM patients (14,20). This can be explained by a study on self-efficacy in type 2 DM patients, which shows that type 2 DM patients with poor self-efficacy will have a decreased quality of life (13).

Based on a literature review related to self-efficacy, most studies show the effectiveness of self-efficacy on diabetes self-management and improving the quality of life of type 2 DM patients, especially regarding drug regulation or diabetes medication (21). Other studies have also found no significant relationship between self-efficacy and the quality of life of type 2 DM patients, especially in the physical health component (22).

Several systematic studies are being conducted to analyze the relationship between self-efficacy and diabetes self-management and the quality of life of type 2 DM patients in developing countries. But most studies haven't gone into detail about how strong self-efficacy is for the self-management of diabetes and the quality of life of people with type 2 DM. This is shown by the fact that health professionals aren't told how to improve self-efficacy as a separate intervention. When taking a patient's medical history, health professionals can start by figuring out how good the patient is at taking care of themselves. Next, they can teach the patient about self-management of diabetes as an intervention that can be built into health services. Health workers can teach people about the importance of self-efficacy in diabetes self-management and improving the quality of life for people with type 2 diabetes if they know its importance. Thus, we conducted a systematic review to determine the relationship between self-efficacy, diabetes self-management, and the quality of life of people with type 2 DM in developing countries.

METHODS

This study's design was a systematic review using the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines (23).

Inclusion and exclusion criteria

This study examined the relationship between self-efficacy and self-management of diabetes and the quality of life of individuals with type 2 DM. The inclusion criteria in this systematic review: population (P) in patients diagnosed with type 2 DM. Exposure (E) is self-efficacy. The main outcome (O) expected in this paper is diabetes self-management and quality of life of type 2 DM patients. The study design (S) used in the research is a cross-sectional study. Exclusion criteria for this systematic review: type 1 diabetes, and all other types of diabetes. Other outcomes, including social support, are excluded. This research employs a cross-sectional design for its analysis and PEO (S) framework in Table 1.

Table 1. PEO(S) Framework

PEO (S)	Description of detail
Population	Type 2 Diabetes Mellitus patients
Exposure	Self-efficacy
Outcome	Self-management and quality of life
Study Design	Cross-sectional study

Literature search strategy

From 2018 to 2022, a literature search was conducted using the databases Scopus, Web of Science, PubMed, and EBSCOhost (CINAHL). The search strategy consisted of multiple steps, including entering keywords to view articles pertinent to the research. Combining the terms "self-efficacy", "type 2 diabetes", "self-management", and "quality of life" led to this result. The following step was to check for duplicates between databases and remove duplicate articles, followed by reading the title and abstract. Adjusting to the established inclusion and exclusion criteria is the next step. In the

end, we obtained the full text of the articles and identified nine that met the criteria for a systematic review. In addition, a manual study selection process was conducted for articles that met the research objectives. Articles that did not align with the objectives of the study were excluded. If articles were duplicated, then the duplicated articles were removed. In addition, relevant titles and abstracts were screened for relevance to the research objectives.

Data extraction

The authors reviewed all of the abstracts returned by the initial search and eliminated any studies that did not meet the inclusion criteria. During the data extraction process, the author, publication year, study design, baseline sample, final sample size, and duration of exposure were collected. After the data extraction process, all authors reevaluated the extracted data to ensure its accuracy. Inconsistent data was discussed in face-to-face meetings.

Critical assessment of the methodological quality of the study

Utilizing a checklist recommended by the Joanna Briggs Institute, this guide evaluates the quality of the study methodology (24). This cross-sectional research checklist contains eleven items. Each response item is rated as "yes," "no," "clear," or "not applicable" based on the information provided by the relevant article. Calculated by dividing the number of items rated "yes" by the total number of items, the score indicates the quality of the study as a whole. Studies with a score of 75 % were categorized as high quality, those between 50 % and 74 % as medium quality, and those with a score of 50 % as low quality. The evaluation of the study's quality yielded a score of 88.9 percent, or high quality (Table 2).

Data synthesis

Each selected article's full text was reviewed to extract essential information for a table summary. This section included the study's design, the sampled population, the instruments used, the variables and measurements, and the main conclusions. The key findings from the included studies were analyzed in narrative form (Table 3).

RESULTS

Study selection

A search of 4 databases, Scopus, Web of Science, PubMed, and EBSCOhost (CINAHL) yielded 1519 articles and two articles from other methods (citations) that may be pertinent to the research objectives (Figure 1). There were up to 270 duplicate records issued, leaving a total of 1 249 articles. In addition, up to 1 177 records were issued despite not meeting the inclusion criteria. The remaining 72 articles are being considered for review. In addition, 72 articles were evaluated for eligibility, and 65 were excluded because they did not meet the inclusion criteria, which included populations with type 1 DM patients or other types, the articles were not about self-efficacy, the results were inappropriate, and the articles were literature reviews and qualitative studies. Seven articles from database searches (12-15,17,25,26); and two articles from citation searches with full-text readings (16,20), where nine articles were included in this systematic review. Figure 1 details the study selection procedure.

Study and subject characteristics

Table 3 shows the characteristics of study participants among nine studies, of which seven studies were conducted in Asian countries, including two studies conducted in Indonesia (13,15), one study conducted in Malaysia (20), Saudi Arabia (16); Iraq (17); Turkey (14); and China (26). Furthermore, two studies were conducted in African countries, Sudan (12) and Ethiopia (25). 4 337 patients with type 2 diabetes, aged 20 to 80, participated in the study. Two studies were conducted in primary health care (13,20); five studies were conducted at the hospital (12,14,15,17,25); and two studies
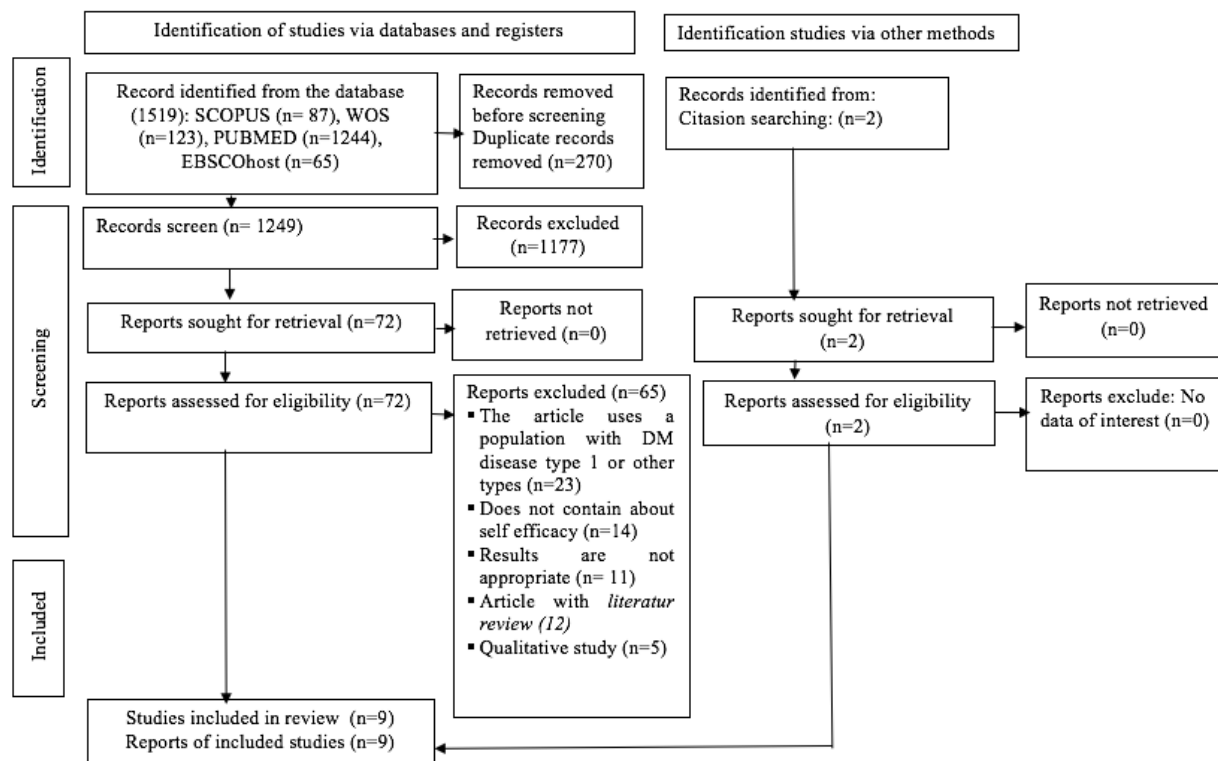
Figure 1. Flow chart of study selection.

were conducted in the community (16,26). Every study utilized a cross-sectional design. This study included patients with type 2 diabetes, including 1 974 men (45.5 %) and 2 363 women (54.5 %). The average age of type 2 DM patients in the studies included in this review ranges from 45 to 66.7 years (13,20). The duration of diabetes mellitus was categorized as five years for as many as 1360 people (31.4 %), >5–10 years for as many as 1516 people (35.5 %), and >0 years for as many as 1 461 people (33.6 %).

Measures

The majority of studies use the Diabetes Management Self-Efficacy Scale (DMSES) as a measurement tool or instrument to assess the self-efficacy of type 2 diabetes patients, according to a review of the literature (12–16,25). The Diabetes Empowerment Scale Short Form (DES-

SF) measures a person's level of empowerment with diabetes. Malay version of the MU in Self-efficacy Questionnaire/MUSE (20), Diabetes Self Efficacy/DSE (17,26). The Health Survey Medical Outcomes Study Short Form/SF-36 (13), the WHO Quality of Life Scale (14), and the Revised Diabetes Quality of Life-13 are used to assess the quality of life (RVDQOL-13). The Revised Summary of Diabetes Self-Care Activity (12); the Summary of Diabetes Self-Care Activity (15,16); and the Diabetes Self-Management Questionnaire are used to assess diabetes self-care or management (25).

Methodological appraisal of included studies

The methodological quality of the nine cross-sectional studies revealed that the vast majority of studies (n = 9) were of high quality (Table 2).

Table 2. Study quality assessment for cross-sectional study

First Authors	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	%
Amelia et al., 2018	Yes	Yes	Yes	Yes	No	No	Yes	Yes	75.0
Amer, 2018	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	87.5
Cagan, 2021	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	87.5
Clara et al., 2021	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	87.5
Saad et al., 2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	100.0
Madram, 2022	Yes	Yes	Yes	Yes	No	No	Yes	Yes	75.0
Oluma et al., 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	100.0
Yao et al., 2019	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	87.5
Rosly et al., 2022	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	87.5

Question description:

Un = Unclear

1) Were the criteria for inclusion clearly defined?; 2) Were the subjects and settings of the study described in detail?; 3) Are exposure measurements valid and reliable?; 4) What objectives and standard criteria were used to measure the conditions?; 5) Were confounding factors identified?; 6) Were strategies to prevent confounding variables explained?; 7) Are the results measured accurately and reliably?; 8) Was the statistical analysis employed suitable? (24).

As shown in Table 1, all studies were of high quality. Two studies lack the identification of confounding factors (13,17). Seven studies do not explain strategies for preventing confounding factors, according to the findings of the literature review (12-15,19,20,26);

The relationship between self-efficacy and self-management

From a total of nine studies, six explain the relationship between self-efficacy and diabetes self-management in type 2 DM patients, as indicated by the literature review results. According to the findings of the six studies in Table 3, type 2 DM patients with high self-efficacy have superior self-management skills (12). Another study found that for every 1-point increase in self-efficacy, self-management behaviour increases by 0.060 days after knowledge and duration of diabetes control (15). One study elaborated that type 2 DM patients with high self-efficacy could self-manage their condition effectively, including better diet arrangements, exercise, blood glucose monitoring, and foot care (16). According to additional studies, higher self-efficacy correlates with increased self-management behaviour (17). It was further explained that type 2 DM patients with high self-efficacy were 17.3 times more likely to improve good self-management behaviour than those with low self-efficacy (25). According to the findings of the most recent study, a one-point increase in self-efficacy increases self-management behaviour by 1.25 times (26).

The relationship between self-efficacy and quality of life

Three studies explain the relationship between type 2 DM patients' self-efficacy and quality of life. Table 3 demonstrates that type 2 DM patients with high self-efficacy enjoy a high quality of life. It was further explained that type 2 DM patients with high self-efficacy are 8.9 times more likely to enjoy a high quality of life than those with low self-efficacy (13). Other studies have found that self-efficacy has a weak positive relationship with life quality (14). It was elaborated that patients with high self-efficacy regarding treatment comprehension have a higher quality of life (20).

Table 3. Characteristics of the included studies

No	Title, Author, year, country	Research purposes	Design and Settings	Sample and age (age range)	Measuring instrument	Results and Conclusions
1.	Self-efficacy in type 2 diabetes mellitus patients and the relationship with the quality of life in Medan City (13), 2018, Indonesia	Analyzing the relationship between self-efficacy and quality of life among type 2 patients with type 2 diabetes at the Tuntungan Health Center in Medan	A cross-sectional study, Tuntungan Primary Health Care in Medan	83 patients with type 2 diabetes who met the inclusion criteria	Diabetes Management Self-Efficacy Scale (DMSES) for assessing self-efficacy and medical outcomes Examine the SF-36 to evaluate quality of life.	There is a relationship between self-efficacy and quality of life among type 2 DM patients at the Tuntungan Medan Health Center, with a p-value of 0.012 (p 0.05) and a 95% confidence interval for the odds ratio (OR) of 1.227-9.950. To increase the self-efficacy of type 2 DM patients, there is an immediate need for relevant and enduring health education.
2.	Influence of self-efficacy management on adherence to self-care activities and treatment outcome among diabetes mellitus type 2 Sudanese patients (12), 2018, Sudan	Determine the relationship between self-efficacy management and self-care behaviour adherence and treatment outcomes among type 2 diabetes patients in Sudan.	A cross-sectional analysis of two nursing care facilities (Zabir Abu Elitz Diabetes Center and The Outpatient Clinic in Soba Teaching Hospital)	392 patients with type 2 DM	Diabetes Management Self-Efficacy Scale (DMSES) to measure self-efficacy and Diabetes Self-Management Activity Scale (SDSCA) to measure diabetes self-management.	The relationship between self-efficacy and self-management of type 2 DM patients has a p-value of 0.002 (p 0.05) OR 2.1 with CI 1.3-3.5. Patients with a high level of self-efficacy are compliant with nutrition management, physical exercise, and medication management. Diabetes self-efficacy management is the only predictor of diabetes control.
3.	Examination of self-efficacy and quality of life of patients with type 2 diabetes regarding diabetes management (14), 2021, Turkey	Understanding the level of self-efficacy of type 2 DM patients in relation to their self-care and the factors that influence them, as well as analyzing the relation-	Cross-sectional study, State hospital	342 patients with type 2 DM 2166 patients with type 2 DM 321 patients with type 2 DM	WHO Diabetes Management Self-Efficacy Scale (SES) to measure self-efficacy, and the Diabetes Manage-	Patients with type 2 diabetes have a relationship between self-efficacy and quality of life with a p-value of 0.000 0.05 and a correlation coefficient (r-value) of

...continuation Table 3. Characteristics of the included studies.

No	Title, Author, year, country	Research purposes	Design and Settings	Sample and age (age range)	Measuring instrument	Results and Conclusions
		ship between self-efficacy and quality of life in type 2 DM patients.			ment Self-Efficacy Scale (SES). To measure the quality of life, the Quality of Life Scale-Brief Form-Turkish Version (WHOQOL-BREF-TR) is administered	0.461 (weak strength of positive relationship). Higher diabetes self-efficacy exists among patients who are married, college-educated, have received disease-related training/information, have no other chronic diseases, and lack complications. Patients who received oral antidiabetic medications and exhibited no complications had a higher quality of life (p 0.05).
4.	Self-Efficacy as a Predictor of Self-Management Behavior Practice Among People with Type 2 Diabetes Mellitus (15), 2021, Indonesia	Identifying the association between self-efficacy and self-management behaviour in patients with type 2 Diabetes Mellitus	Cross-sectional study, Bekasi hospital	112 DM type 2 patients	Diabetes Management Self-Efficacy Scale (DMSES) to measure self-efficacy and Diabetes Self-Management Activity Scale (SDSCA) to measure diabetes self-management.	With a p-value of 0.000 0.05, there is a significant relationship between self-efficacy and self-management behaviour. Multivariate analysis reveals a relationship between self-efficacy and self-care behaviour after controlling for knowledge and duration of diabetes (B = 0.060 and R Square = 0.248, respectively).
5.	Self-efficacy, self-care, and glycemic control in Saudi Arabian patients with type 2 diabetes mellitus: A cross-sectional survey (16), 2017, Saudi Arabia	Understanding the association between self-efficacy and self-management behaviour in patients with type 2 diabetes	Cross-sectional study, The Sultan bin Abdulaziz Humanitarian City in Riyadh	123 patients with type 2 DM	Diabetes Management Self-Efficacy Scale (DMSES) to measure self-efficacy and Diabetes Self-Management Activity Scale	There is a correlation between self-efficacy and self-management behaviour (good diet level (p = 0.000, OR = 0.115), exercise (p = 0.003, OR = 0.275), blood

...continuation Table 3. Characteristics of the included studies.

No	Title, Author, year, country	Research purposes	Design and Settings	Sample and age (age range)	Measuring instrument	Results and Conclusions
					(SDSCA) to measure diabetes self-management.	sugar test (p = 0.000, OR = 0.219), and foot care (p = 0.000, OR = 0.843).
6	Self-efficacy and its relationship to self-care among type II diabetic patients (17), 2022, Iraq	Evaluating the relationship between self-efficacy and self-care in patients with type II diabetes	A correlational study, AL-Zahraa Teaching Hospital in Wasit Province/ Iraq	400 patients with type 2 DM	The Morisky Medication Adherence Scale consists of 34 items to measure self-efficacy and 30 items to measure diabetes self-management adherence.	The correlation between self-efficacy and self-care is significant (positive) (r=0.126; p=0.012). The results of the simple linear regression test indicated that self-efficacy had a significant effect on the self-care of type 2 DM patients (p=0.012, B=0.156, and beta=0.126).
7.	Perceived Self-Efficacy and Associated Factors Among Adult Patients with Type 2 Diabetes Mellitus at Public Hospitals of Western Ethiopia, (25), 2020, Ethiopia	Assessing the impact of perceived self-efficacy and related factors on type 2 diabetes patients at the Ethiopian West General Hospital.	A cross-sectional study, Public hospitals in Western Ethiopia	398 type 2 DM patients	Diabetes mellitus self-efficacy Scale (DMSES) to measure self-efficacy and the Diabetes Self Management Questionnaire (DSMQ) to measure self-management of diabetes.	Self-efficacy and self-care behaviour are related (p value 0.001; OR = 17.262) (CI9.516,31.312). Perceived self-efficacy is at a high level. Self-testing blood glucose at home, self-care behaviours, physical activity, and a special diet were significantly associated with a high perception of self-efficacy. Policymakers must pay attention to changes in patient behaviour in developing self-efficacy so that they can confidently administer diabetes care.

...continuation Table 3. Characteristics of the included studies.

No	Title, Author, year, country	Research purposes	Design and Settings	Sample and age (age range)	Measuring instrument	Results and Conclusions
8	The association between self-efficacy and self-management behaviors in among Chinese patients with type 2 diabetes (26), 2019, China	Determine how patients with type 2 diabetes in China feel about themselves and how they manage on their own.	A cross-sectional survey, of Essential Public Health Service (EPHS) in Shandong Province, China	2 166 patients with type 2 DM	Assessing self-efficacy in diabetes management with the Diabetes Empowerment Scale-Short Form (DES-SF).	There is a correlation between self-efficacy and self-management behaviour in patients with type 2 diabetes (p = 0.001 and OR = 1.25 (1.16–1.35)). Self-efficacy in managing diabetes is related to self-management behaviour among Chinese patients with type 2 DM. Some strategies are required to improve the patient's self-efficacy in self-management.
9	Relationship of Self-Efficacy in Medication Understanding with Quality of Life among Elderly with Type 2 Diabetes Mellitus on Polypharmacy in Malaysia (20), 2022, Malaysia	Understanding the relationship between self-efficacy in medication understanding and quality of life and factors related to quality of life in older adults with type 2 diabetes at the pharmacy.	A cross-sectional study, Institutional Primary Care Specialist Clinic (PCSC) in Selangor	321 patients with type 2 DM	The Self Efficacy in Medication Understanding (MUSE) Malay version and the Revised Version of Diabetic Quality of Life (RVDQOL-13) Malay version were used to measure self-efficacy and quality of life, respectively.	There is a correlation between self-efficacy in treatment comprehension and quality of life in patients with type 2 diabetes (p = 0.012, r = -0.140, Standardized Coefficients Beta () = 0.193). (0.852, 0.270). In elderly patients with type 2 DM on polypharmacy, a negative correlation was found between MUSE and DQOL, particularly between the domains of medication taking and satisfaction and medication taking and impact, where those with greater SE in taking medication had greater satisfaction and impact. To improve the quality of life of type 2 DM patients, self-efficacy in understanding treatment is required.

DISCUSSION

The relationship between self-efficacy and diabetes self-management

The results of the study showed that there is a relationship between self-efficacy and diabetes self-management in type 2 DM patients. Self-efficacy in managing diabetes in people with type 2 diabetes can have a positive effect on patient knowledge about diabetes and understanding of diabetes as a protective factor, making management more effective (27). It was further explained that self-efficacy correlates with diabetes self-management by reducing the risk of complications, improving foot care, and developing eating patterns or diet plans (28). Some of these explanations are reinforced by the statement that self-efficacy contributes to a better understanding of changing health behaviours by increasing knowledge, behaviour, and skills (29). Furthermore, self-efficacy plays an essential role in improving self-care behaviour and is influenced by knowledge and the duration of DM (30).

Self-efficacy can be a predictor of success in diabetes self-management. Type 2 DM patients with good self-efficacy can carry out diabetes self-management to achieve adequate glycemic control (31). One of the studies showed a negative correlation between self-efficacy and HbA1c levels, with the understanding that the more self-efficacy increases, the lower the HbA1c levels (32). Other studies explain that self-efficacy is a strong predictor of glycemic control. Furthermore, self-efficacy is related to self-management behaviours such as higher levels of diet and exercise, monitoring of blood sugar levels, and medication adherence (16). The statement reinforces that self-efficacy contributes to better diabetes outcomes and is significantly correlated with diet and physical activity (33).

Health professionals must emphasize patient self-efficacy's importance in carrying out their roles and functions in serving patients. Indeed, self-efficacy is crucial in diabetes self-management, especially in performing recommended activities and maintaining psychosocial functioning (34). In response to this point of view, healthcare professionals must help patients feel more confident in their ability to self-manage their diabetes. If the patient has good self-management, this can reduce complications due to diabetes (35). Also, patients who do an excellent job of self-managing their diabetes could help the healthcare system save money (36) social and environmental. In this case, this would be in the form of lower medical costs. Efforts to improve self-efficacy will affect how well patients follow their self-management plans to get their blood sugar under control. Health professionals can take measures, including teaching patients how to gauge the difficulty level they believe they can overcome. Furthermore, the patient needs to know the strength of his belief and how far the belief in this ability is applied, whether the patient can carry out all aspects of self-management or is it limited to certain aspects. Thus, aspects of patient self-efficacy that contribute to improving diabetes self-management will be identified.

The relationship between self-efficacy and quality of life in type 2 DM patients

The results showed that self-efficacy has a solid link to the quality of life of people with type 2 diabetes. This is made clear by the fact that people with type 2 diabetes who have a good sense of self-efficacy also have a good quality of life. DM is a metabolic disease that lasts long and can't be cured. It can affect many parts of life. Type 2 DM has been shown to reduce health-related quality of life (37). It was also shown that people with diabetes who take care of themselves well have better outcomes, live longer, have a higher quality of life, have fewer symptoms, and have fewer complications (38). In support of this study it was shown that better self-care, especially exercise, is associated with better HbA1c levels, better Body Mass Index (BMI), fewer diabetes complications, and higher quality of life (39). In effect, Rosli et al., 2022 showed a relationship between self-efficacy and the quality of life of type 2 DM patients, and these patients can have a better quality of life if they understand their treatment. One of the results also explains that type 2 DM patients who have high self-efficacy will have an impact on increasing quality of life (26).

DM patients who are managing their disease need self-efficacy. Type 2 DM patients with good self-efficacy show a good quality of life. Health

professionals must emphasize the importance of self-efficacy to type 2 diabetes patients. Type 2 DM patients urgently need the self-efficacy factor to increase individual confidence in their ability to self-care, which will impact the quality of their lives (9). This statement is reinforced by the study that showed that type 2 DM patients have a lower quality of life if they have lower self-efficacy or self-confidence in managing the disease (40). Therefore, nurses are essential in increasing the self-efficacy of type 2 DM patients through health education so that patients can perform self-care and thereby improve their quality of life. There is also a reciprocal relationship such that type 2 DM patients with a high quality of life can carry out good self-management (41).

Strengths and limitations

Our study employed a stringent search strategy to cover a large number of eligible studies, a stringent review procedure, and appropriate data analysis, thereby increasing the reliability of the results. Self-efficacy plays a significant role in diabetes self-management and in enhancing the quality of life of type 2 DM patients, according to most of the literature review results; however, the amount of literature utilized is minimal (9 publications). It is necessary to explain the limitations of this literature review, and the results should be interpreted with caution. The first factor is that several terms may be omitted from the initial keyword search to conceal related studies. Due to time constraints and limited resources, this systematic review did not register and publish a predetermined protocol before beginning the review. The third factor is that the review only contains English-language articles, so there is the possibility of using other languages that meet the inclusion criteria but were omitted.

CONCLUSION

The practical implication of this study is that nurses must evaluate the confidence and ability of type 2 DM patients to engage in self-care behaviours to achieve normal blood glucose levels, which will positively impact the quality

of life. For patients to effectively manage their disease, nurses must continue to encourage them by boosting their self-esteem. Self-confident patients with type 2 DM can self-manage their diabetes, which includes regulating diet, engaging in physical activity or exercise, managing medications, monitoring blood glucose levels, foot care, and stress management. Proper diabetes self-management will result in adequate glycemic control, enhancing the quality of life. Additional research can be conducted, particularly on the role of self-efficacy in alleviating psychological stress in type 2 DM patients.

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