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Meta-Analysis
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Meta Analysis: Factors Affecting Implementation of Self-Care Practice in Diabetes Mellitus Patients

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ABSTRACT

Background: Diabetes mellitus is a chronic metabolic disorder characterized by high blood sugar levels. If not controlled properly, diabetes mellitus can cause serious complications. Self-care practices are a very important factor in controlling the disease. This study aims to estimate the factors that influence self-care practices in diabetes sufferers.

Subjects and Method: This was a systematic review and meta-analysis using PICO format. Population: diabetes patients. Intervention: having diabetes knowledge, high social support, female gender and presence of comorbidities. Comparison: no diabetes knowledge, low social support, male gender and no comorbidities. Outcome: self-care practices. The articles used in this research came from 5 databases, namely Google Scholar and Science Direct. The keywords of the article are "Diabetes Knowledge" AND "Social Support" AND "gender" AND "comorbidities" AND "diabetes" AND "Self-care practice behavior". The articles included in this research are full paper articles, cross-sectional study, publication year range 2017-2023, and reporting the aORs. Articles were analyzed using the Review Manager 5.4.

Results: Female patients (aOR=1.56; 95% CI= 1.04 to 2.34; p= 0.030), high knowledge (aOR= 2.10; 95% CI= 1.27 to 3.46; p= 0.004), strong social support (aOR=1.73; 95% CI= 1.07 to 2.78; p= 0.020), and the presence of comorbidities (aOR=1.20; 95% CI= 0.67 to 2.16; p= 0.540) improved implementation of self-care practices.

Conclusion: Female patients, high knowledge, strong social support, and the presence of comorbidities improve implementation of self-care practices.

Keywords: factors, diabetes self-care practices, diabetes mellitus.

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BACKGROUND

Diabetes mellitus is a chronic condition that occurs when blood glucose levels increase because the body is unable to produce enough insulin or cannot use insulin efficiently. Insulin is an important hormone produced by the pancreatic gland in the body, and its function is to transport glucose from the bloodstream into the body's cells where it is converted into an energy source. Insulin insufficiency or the inability of cells to respond to insulin results in increased

blood glucose levels, or what is known as hyperglycemia, which is a typical sign of diabetes (Cho et al., 2017).

Diabetes mellitus is a non-communicable disease that often occurs and is usually a chronic metabolic disorder characterized by high blood sugar levels. If not controlled properly, DM can cause various serious complications in various body organs such as the heart, blood vessels, eyes, kidneys and nervous system. Worldwide, more than half a billion people are estimated to be affected by DM, and low-income countries experience a significant impact, with high rates of undiagnosed DM cases (Kobamo, 2023).

The prevalence of diabetes mellitus throughout the world continues to increase significantly. According to data from the IDF (International Diabetes Federation), the number of diabetes mellitus cases in the world reached 135.6 million people in 2019, which is equivalent to around 19.3% of the global population in that year. Projections for 2030 indicate a further increase, with the estimated number of cases reaching 195.2 million. In 2045, it is predicted that there will be an even greater increase, with the number of cases estimated to reach 276.2 million people (IDF, 2019).

Diabetes self-care practices are a very important factor in controlling this disease and reducing the risk of premature death. Approximately 95% of this care, including self-monitoring of blood glucose, nutritional management, physical activity, medication adherence, and foot care, is usually performed by the individual with diabetes or by their family. Self-care practices have a positive relationship with good blood sugar control, reducing the risk of complications associated with diabetes, and improving quality of life (Zewdie et al., 2022). With the background that has been described, the authors are interested in conducting study to determine the influence of knowledge, social support, gender and comorbidities on the implementation of self-care practices in diabetes sufferers.

SUBJECTS AND METHOD

1. Study Design

This study collected and selected articles that published from 2017 to 2023. The selection of articles used the PRISMA diagram. The keywords used to search the article were "Diabetes Knowledge" AND "Social Support" AND "Gender" AND "Comorbidities" AND "Diabetes" AND "Self-care practice behavior".

2. Steps of Meta Analysis

This research uses meta analysis steps, among others:

1) Formulating PICO includes P= Diabetic patients, I= Good diabetes knowledge, high social support, female gender and having comorbidities, C= poor diabetes knowledge, low social support, male gender and not having comorbidities, O=self-care practices.
2) Search for main study articles from a variety of electronic and non-electronic journals.
3) Conduct screening and critical appraisal of primary research study articles.
4) Extract and synthesize output forecast data into RevMan 5.4.
5) Present the results and draw conclusions.

3. Inclusion Criteria

This research was conducted using inclusion criteria, namely full text articles with a cross-sectional research design. This article was published in English from 2017 to 2023. Analysis of diabetes knowledge, gender, social support, comorbidities until the end of the study was reported using adjusted odds ratios (aOR).

4. Exclusion Criteria

This research was carried out using exclusion criteria, namely articles that had been meta-analyzed, did not use a cross-sectional design, the final results of the study were not reported using the adjusted odds ratio (aOR) and the sample was <100 participants.

5. Operational Definition of Variables

The article search was carried out taking into account the eligibility criteria determined using the PICO model.

Diabetes knowledge: Information that a person has to be the basis for carrying out the next business or action.

Social support: Forms of attention, help and acceptance felt by individuals through social ties with other individuals, groups and larger communities.

Gender: Differences in a person's shape, characteristics and reproductive organs that can influence behavior.

Comorbid: A comorbid disease suffered by a person when he or she is attacked by another disease.

Self-care practice behavior: A person's ability to meet their needs to maintain and improve their health condition.

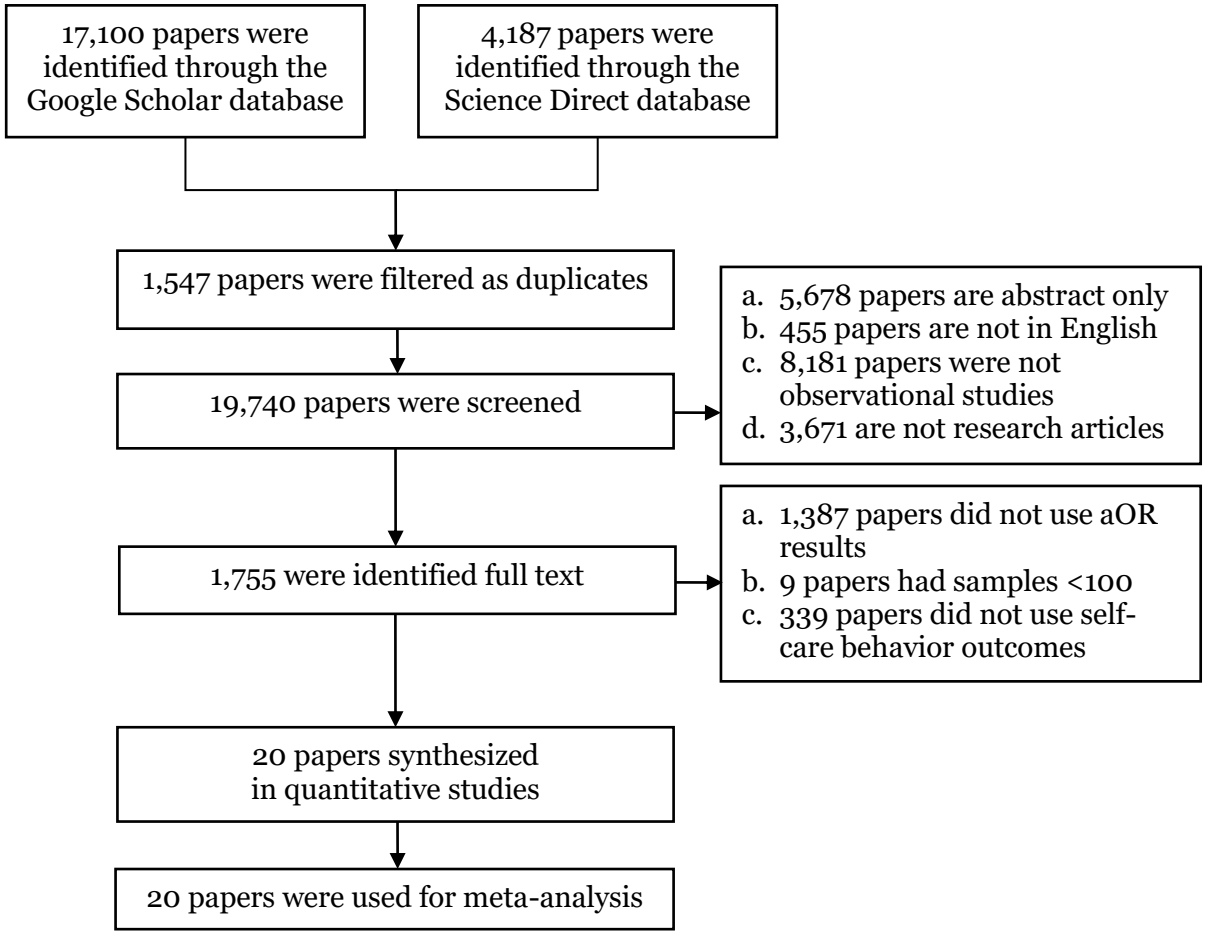

Figure 1. PRISMA flow diagram

6. Instrument

The instrument in this research is the PRISMA Flow Diagram using primary study quality assessment for a cross-sectional design for Meta-analysis.

7. Data Analysis

From the articles that have been collected, data processing was carried out using the Review Manager application (RevMan 5.4) to determine the magnitude of the influence of knowledge, social support, gender and comorbidities on diabetes self-care practices. Data processing is presented in the form of forest plots and funnel plots.

RESULTS

The process of searching for articles to be synthesized then the process of reviewing and selecting articles using the PRISMA Flow Diagram shown in Figure 1. The initial search process produced 21,287 articles, after eliminating duplicate articles, 19,935 articles were produced, then after the process of eliminating duplicate articles, the next step was to check relevance of the title and study design used to produce 1,547 articles.

After that, we checked the articles according to the inclusion criteria and obtained exclusion criteria of 476 articles. From the filtered articles, research quality was assessed, 20 articles were found. Based on Figure 2, it can be seen that 20 research articles come from one continent of Africa (Ethiopia).

Figure 2. Research area of cross-sectional study of factors influencing the implementation of self-care practices in diabetes mellitus patients

Table 1. Critical appraisal of a cross-sectional study of the influence of implesmenting self-care practices on diabetes mellitus patients

Author (Year)	Appraisal Criteria													Total
	1a	1b	1c	1d	2a	2b	3a	3b	4	5	6a	6b	7	
Ambaw et al. (2021)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Ambaw et al. (2021)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Chali et al. (2018)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Dedefo et al. (2019)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Emire et al. (2022)	2	2	2	2	2	2	2	2	2	2	2	2	2	26

Author (Year)	Appraisal Criteria													Total
	1a	1b	1c	1d	2a	2b	3a	3b	4	5	6a	6b	7	
Gebre et al. (2020)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Getie et al. (2020)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Gulentie et al. (2020)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Gurmu et al. (2018)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Kobamo et al. (2023)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Letta et al. (2022)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Mamo dan Demissie (2017)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Melkamu et al. (2021)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Mekonen dan Demssie (2022)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Mekonnen dan Hussien (2021)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Niguse et al. (2019)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Tiruneh et al. (2019)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Tuha et al. (2021)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Ma et al. (2021)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Zewdie et al. (2022)	2	2	2	2	2	2	2	2	2	2	2	2	2	26

Description of question criteria:

1. Formulation of research questions in the acronym PICO

a. Is the population in the primary study the same as the population in the PICO meta-analysis?

b. Is the operational definition of intervention, namely the exposed status in the primary study, the same as the definition intended in the meta-analysis?

c. Is the comparison, namely the unexposed status used by the primary study, the same as the definition intended in the meta-analysis?

d. Are the outcome variables examined in the primary studies the same as the definitions intended in the meta-analysis?

2. Methods for selecting research subjects

a. In analytical cross-sectional studies, do researchers choose samples from the population randomly (random sampling)?

b. As an alternative, if in a cross-sectional analytical study the sample is not selected randomly, does the researcher select the sample based on outcome status or based on intervention status?

3. Methods for measuring exposure (intervention) and outcome variables (outcome)

a. Are the exposure and outcome variables measured with the same instruments (measuring tools) in all primary studies?

b. If the variable is measured on a categorical scale, are the cutoffs or categories used the same across primary studies?

4. Design-related bias

If the sample was not selected randomly, has the researcher made efforts to prevent bias in selecting research subjects? For example, selecting subjects based on outcome status is not affected by exposure status (intervention), or selecting subjects based on exposure status (intervention) is not affected by outcome status.

5. Methods for controlling confusion

Whether the primary study investigators have made efforts to control the influence of confounding (for example, conducting a multivariate analysis to control for the

influence of a number of confounding factors).

6. Statistical analysis methods

a. Did the researcher analyze the data in this primary study with a multivariate analysis model (for example, multiple linear regression analysis, multiple logistic regression analysis).

b. Does the primary study report the effect size or association of the results of the multivariate analysis (adjusted OR).

7. Conflict of Interest

Is there no possibility of a conflict of interest with the research sponsor, which could cause bias in concluding the research results?

Assessment Instructions:

1. Total number of questions = 13 questions. Answer "Yes" to each question gives a score of "2". The answer "Undecided" gives a score of "1". The answer "No" gives a score of "0".
2. Maximum total score= 13 questions x 2= 26.
3. Minimum total score = 13 questions x 0 = 0. So the total score range for a primary study is between 0 and 26. If the total score of a primary study is >= 22, then the study can be included in the meta-analysis. If the total score of a primary study.

Table 2. Description of primary studies on the influence of knowledge level on self-care practices with cross-sectional design (n=3,143)

Author (Year)	Country	Sample	P (Population)	I (Intervention)	C (Comparison)	O (Outcome)
Gebre et al. (2020)	Ethiopia	405	DM patient	Good Knowledge	Poor Knowledge	Self-care practice
Getie et al. (2020)	Ethiopia	513	Adults with DM	Good Knowledge	Poor Knowledge	Self-care practice
Gurmu et al. (2018)	Ethiopia	257	Adults with DM	Good Knowledge	Poor Knowledge	Self-care practice
Kobamo et al (2023)	Ethiopia	297	Adults with DM	Good Knowledge	Poor Knowledge	Self-care practice
Letta et al (2022)	Ethiopia	879	T2DM patients aged ≥18 years	Good Knowledge	Poor Knowledge	Self-care practice
Melkamu et al (2021)	Ethiopia	387	DM patients aged ≥18 years	Good Knowledge	Poor Knowledge	Self-care practice
Tiruneh et al (2019)	Ethiopia	405	DM patients aged ≥18 years	Good Knowledge	Poor Knowledge	Self-care practice

Table 3. Pooled aORs of cross-sectional studies examine the effect of knowledge on self-care practices in DM patients (n=3,143)

Author (Year)	aOR	95% CI	
		Upper Limit	Lower Limit
Gebre *et al* (2020)	3.47	0.20	4.29
Getie *et al* (2020)	2.14	1.37	3.34
Gurmu *et al* (2018)	2.42	1.22	4.80
Kobamo *et al* (2023)	1.99	0.99	4.01
Letta *et al* (2022)	1.04	1.01	1.07
Melkamu *et al.* (2021)	3.31	1.66	6.60
Tiruneh *et al* (2019)	2.72	1.66	4.47

The forest plot in Figure 3 shows that individuals who have high knowledge can increase self-care practices by 2.10 times compared to individuals with low knowledge, and this result is statistically significant (aOR=2.10; 95% CI= 1.27 to 3.46; p= 0.004). The forest also showed high heterogeneity of effect estimates between primary studies I^2= 87%; p<0.001. Calculation of the average effect estimate was carried out using a random effect model.

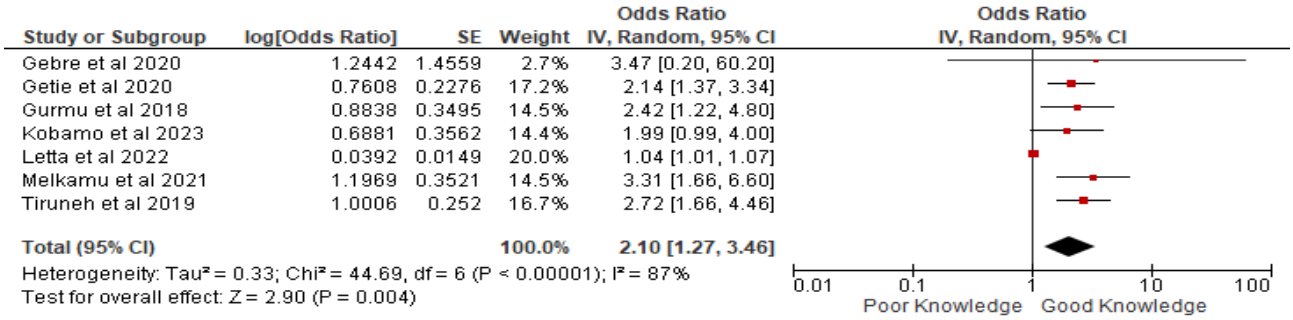

Figure 3. Forest plot of the influence of knowledge on self-care practice in tye 2 DM patients

The funnel plot results in Figure 4 show that the distribution of effect estimates is uneven. The distribution of effect estimates shows that the distribution of effect estimates tends to lie more to the right of the vertical line of average effect estimates than to the left. Thus, this funnel plot image shows the existence of publication bias. Because the distribution of the estimated effect is located to the right of the average vertical line in the same direction as the diamond in the forest plot, publication bias tends to exaggerate the true effect (overestimate).

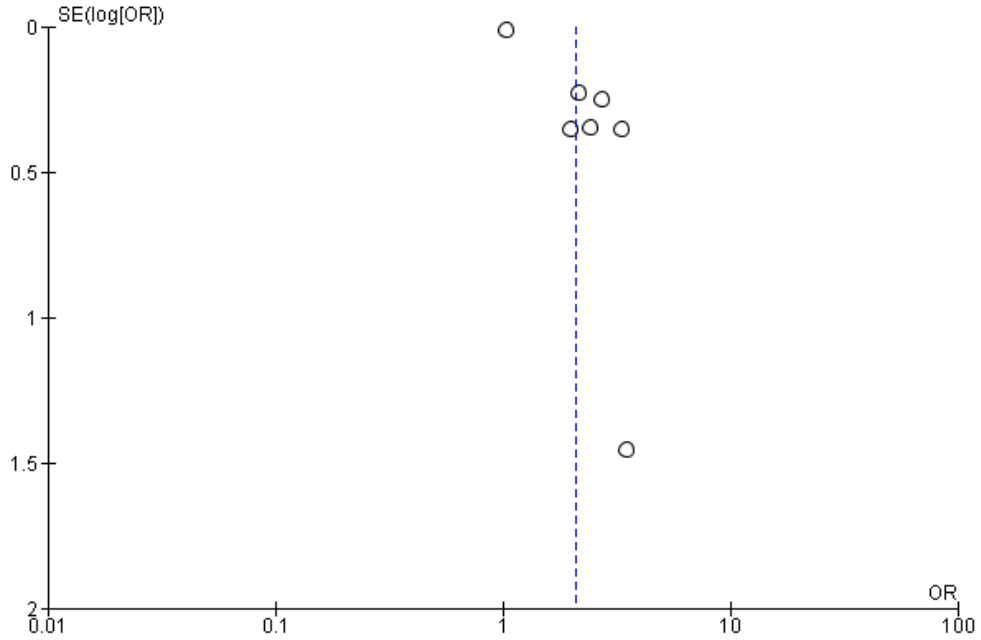

Figure 4. Funnel plot of the influence of knowledge and self-care practice type 2 DM patients

Table 4. Description of primary studies on the influence of social support on self-care practices with cross-sectional design (N=3,785)

Author (Year)	Country	Sample	P (Population)	I (Inter-vention)	C (Compa-rison)	O (Out-come)
Ambaw *et al* (2021)	Ethiopia	390	DM patients aged >15 years	High social support	Low social support	Self-care practice
Aschalew et al (2019)	Ethiopia	403	Adults diagnosed with DM	High social support	Low social support	Self-care practice
Chali et al (2018)	Ethiopia	303	Type 2 DM patients aged ≥18 years	High social support	Low social support	Self-care practice
Gulentie et al (2020)	Ethiopia	404	Adults with type 2 DM aged ≥18 yearrs	High social support	Low social support	Self-care practice
Gurmu et al (2018)	Ethiopia	257	Adult patients with diabetes	High social support	Low social support	Self-care practice
Mamo and Demissie (2017)	Ethiopia	660	DM patients	High social support	Low social support	Self-care practice
Melkamu et al (2021)	Ethiopia	387	Type 2 DM aged over 18 years	High social support	Low social support	Self-care practice
Tiruneh et al (2019)	Ethiopia	405	Type 2 DM patients aged >18	High social support	Low social support	Self-care practice
Wahabrebi et al (2021)	Ethiopia	576	Type 2 DM patients aged >18	High social support	Low social support	Self-care practice

Table 5. Adjusted Odd Ratio data on the influence of social support on self-care practices with a cross-sectional design (N=3,785)

Author (Year)	aOR	95% CI	
		Upper Limit	Lower Limit
Ambaw *et al* (2021)	2.50	1.46	4.27
Aschalew *et al* (2019)	0.31	0.15	0.62
Chali *et al* (2018)	0.54	0.31	0.91
Gulentie *et al* (2020)	3.09	1.76	5.4
Gurmu *et al* (2018)	2.86	1.37	5.96
Mamo and Demissie (2017)	1.59	1.10	2.31
Melkamu *et al* (2021)	4.88	2.00	11.90
Tiruneh *et al* (2019)	2.72	1.66	4.46
Wahabrebi *et al* (2021)	1.88	1.24	2.84

The forest plot in Figure 5 shows that individuals who have high social support can increase self-care practices by 1.73 times compared to individuals who have low social support, and this result is statistically significant (aOR=1.73; 95%CI= 1.07 to 2.78; p=0.020). The forest plot shows high heterogeneity in effect estimates between primary studies I^2=85%; p <0.001. Thus, the calculation of the average estimated effect is carried out using a random effect model approach.

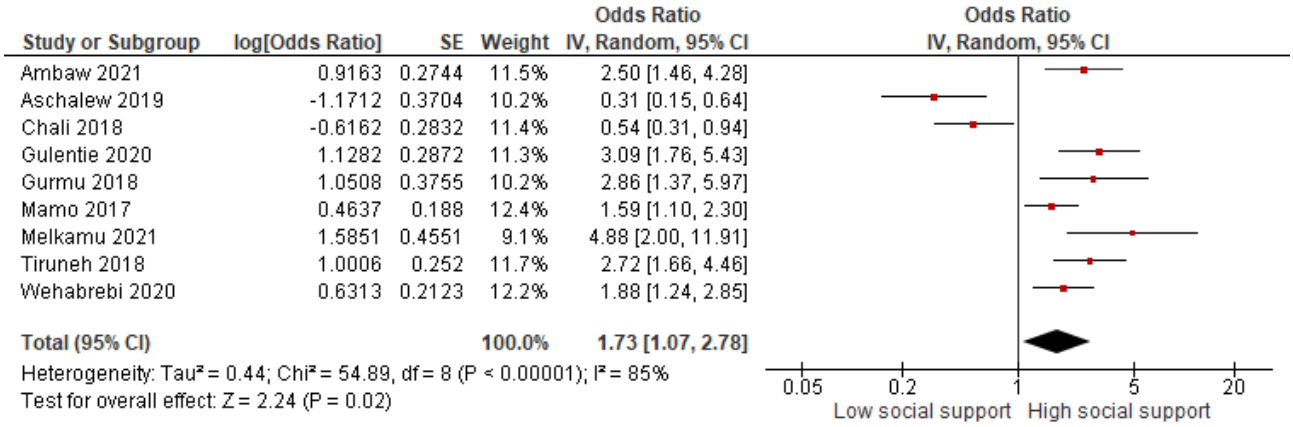

Figure 5. Forest plot of the influence of social support on practice self-care in diabetes patients

The funnel plot results in Figure 6 show that the distribution of effect estimates is uneven. The distribution of effect estimates shows that the distribution of effect estimates tends to lie more to the right of the vertical line of average effect estimates than to the left. Thus, this funnel plot image shows the existence of publication bias. Because the distribution of the estimated effect is located to the right of the average vertical line in the same direction as the diamond in the forest plot, publication bias tends to exaggerate the true effect (overestimate).

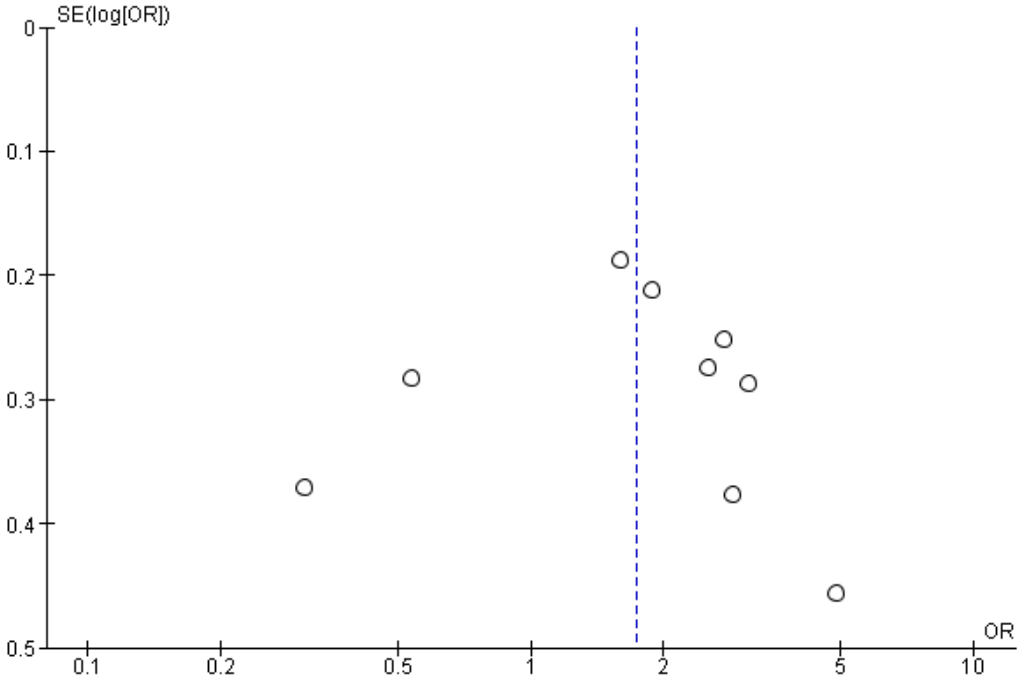

Figure 6. Funnel plot of the influence of social support on practice self-care in diabetes patients

Table 6. Description of primary studies on the influence of comorbidities on self-care practices with cross-sectional design (n=2,310)

Author (Year)	Country	Sample	P (Population)	I (Inter-vention)	C (Compa-rison)	O (Outcome)
Chali *et al* (2018)	Ethiopia	303	Diabetes patients >18	Comorbid	Not comorbid	Practice self-care
Dedefo et al (2019)	Ethiopia	252	Adult diabetic patients	Comorbid	Not comorbid	Practice self-care
Gebre et al (2020)	Ethiopia	405	Outpatient of DM	Comorbid	Not comorbid	Practice self-care
Kobamo et al (2023)	Ethiopia	297	Diabetes patients aged >18	Comorbid	Not comorbid	Practice self-care
Mekonnen and Hussien (2021)	Ethiopia	371	Type 2 DM patients aged >18	Comorbid	Not comorbid	Practice self-care
Niguse et al (2019)	Ethiopia	338	Diabetes patients aged >18	Comorbid	Not comorbid	Practice self-care
Tuha et al (2021)	Ethiopia	344	Diabetes patients	Comorbid	Not comorbid	Practice self-care

Table 7. Adjusted Odd Ratio data on the influence of comorbidities on self-care practices with a cross-sectional design (N=2,310)

Author (Year)	aOR	95% CI	
		Upper Limit	Lower Limit
Chali *et al* (2018)	0.57	0.28	1.16
Dedefo *et al* (2019)	18.62	4.41	78.54
Gebre *et al* (2020)	1.18	0.67	2.06
Kobamo *et al* (2023)	0.669	0.259	1.727
Mekonnen dan Hussien (2021)	0.81	0.51	1.31
Niguse *et al* (2019)	0.64	0.29	0.39
Tuha *et al* (2021)	2.50	1.13	1.25

The forest plot in Figure 7 shows that individuals who have comorbidities can increase self-care practices by 1.20 times compared to individuals who do not have comorbidities and it is not statistically significant (aOR=1.20; 95% CI= 0.67 to 2.16; p= 0.540). The forest plot shows high heterogeneity in effect estimates between primary studies I^2= 77%; p= 0.002. Thus, the calculation of the average estimated effect is carried out using a random effect model approach.

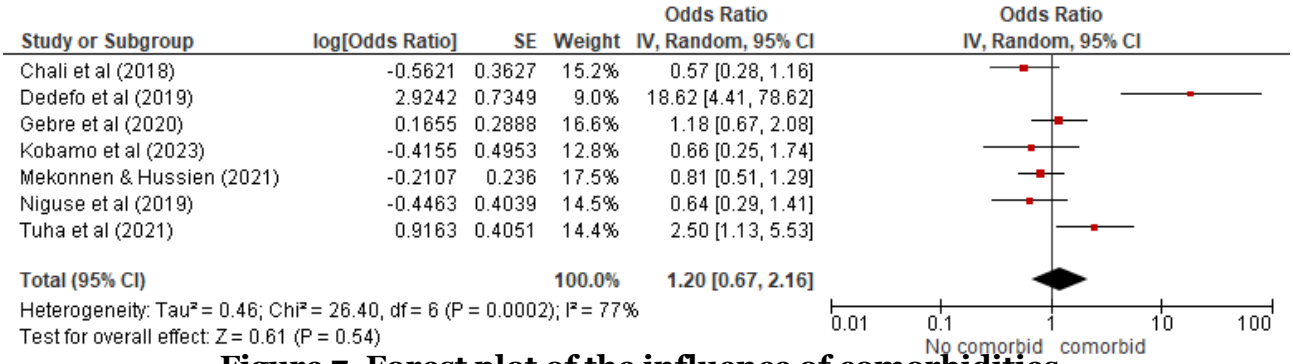

Figure 7. Forest plot of the influence of comorbidities on self-care practices in diabetes patients

The funnel plot results in Figure 8 show that the distribution of estimated effects is uneven. The distribution of effect estimates shows that the distribution of effect estimates tends to lie more to the left of the vertical line of the average effect estimate than to the left. Thus, this funnel plot image shows the existence of bias publication. Because the distribution of effect estimates tends to be located to the left of the average vertical line, which is opposite to the location of the average effect estimate (diamond) which is located to the right, publication bias tends to reduce the true effect (under-estimate).

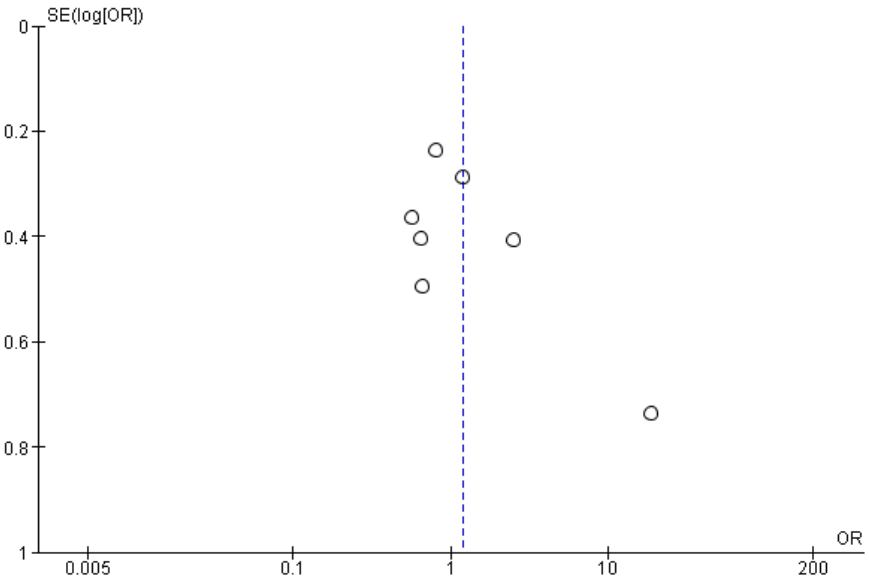

Figure 8. Funnel plot of comorbidities with self-care practices in diabetes patients

Table 8. Description of primary studies on the influence of gender on self-care practices with cross-sectional design (N=3,406).

Author (Year)	Country	Sample	P (Population)	I (Inter-vention)	C (Compa-rison)	O (Outcome)
Aschalew *et al* (2019)	Ethiopia	403	Diabetes patients	Woman	Man	Self-care practice
Chali et al (2018)	Ethiopia	303	Diabetes patients aged ≥18 years	Woman	Man	Self-care practice
Emire et al (2022)	Ethiopia	384	Diabetes patients aged >18 years	Woman	Man	Self-care practice
Letta et al (2022)	Ethiopia	879	Type 2 DM patients aged >18 years	Woman	Man	Self-care practice
Mekonen dan Demssie (2022)	Ethiopia	384	Diabetes patients	Woman	Man	Self-care practice
Mekonnen dan Hussien (2021)	Ethiopia	371	Type 2 DM patients	Woman	Man	Self-care practice
Niguse et al (2019)	Ethiopia	338	Diabetic patients aged >18 years	Woman	Man	Self-care practice
Tuha et al (2021)	Ethiopia	344	Diabetes patients	Woman	Man	Self-care practice

Table 9. Adjusted Odd Ratio data on the influence of gender on self-care practices with a cross-sectional design (N=3,406)

Author (Year)	aOR	95% CI	
		Upper Limit	Lower Limit
Aschalew *et al* (2019)	1.81	0.92	3.56
Chali *et al* (2018)	2.18	1.26	3.77
Emire *et al* (2022)	2.40	1.31	4.40
Letta *et al* (2022)	0.99	0.96	1.02
Mekonen dan Demssie (2022)	0.54	0.32	0.89
Mekonnen dan Hussien (2021)	5.05	2.90	8.69
Niguse *et al* (2019)	1.39	0.72	2.69
Tuha *et al* (2021)	2.07	1.04	4.12

The forest plot in Figure 9 shows that individuals with female gender can increase self-care practices by 1.56 times compared to male gender and this result is statistically significant (aOR=1.56; 95% CI = 1.04 to 2.34; p= 0.030).

The forest plot shows high heterogeneity in effect estimates between primary studies I^2=87%; p<0.001. Thus, the calculation of the average estimated effect is carried out using a random effect model approach.

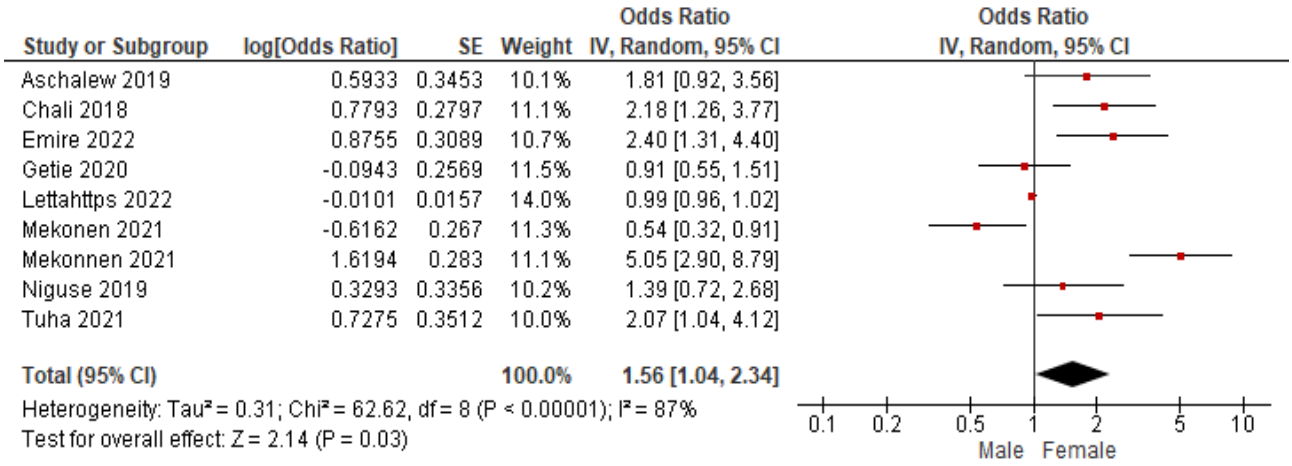

Figure 9. Forest plot of the influence of gender on self-care practices in diabetes patients

The funnel plot results in Figure 10 show that the distribution of effect estimates is uneven. The distribution of effect estimates shows that the distribution of effect estimates tends to lie more to the right of the vertical line of average effect estimates than to the left. Thus, this funnel plot image shows the existence of publication bias. Because the distribution of the estimated effect is located to the right of the average vertical line in the same direction as the diamond in the forest plot, publication bias tends to exaggerate the true effect (overestimate).

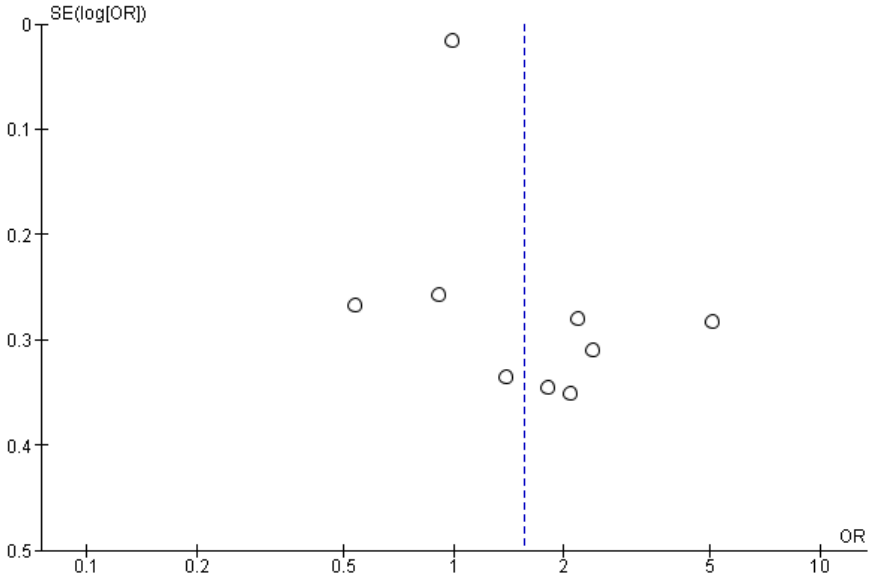

Figure 10. Funnel plot of the influence of gender on self-care practices in diabetes patients

DISCUSSION

This meta-analysis study analyzes the factors that influence the self-care practices of diabetes mellitus patients. This study uses aOR statistics resulting from multivariate analysis which aims to obtain the same final results for the studies to be analyzed.

1. The influence of knowledge on self-care practices

This study shows that knowledge increased self-care practices in diabetes patients. The results of this study is in line with Ishak et al. (2017) who stated that patient self-care practices were significantly related to diabetes knowledge, patients who had good and acceptable diabetes knowledge were found to have diabetes self-care that was 5.89 times higher (β=5.89; 95% CI=1.95 to 8.61; p=0.004) compared to patients who have low knowledge. This is supported by Gulentie et al. (2020) they revealed that patients who frequently receive information are more likely to have good self-care practices compared to those who have limited knowledge about their disease.

Melkamu et al. (2021) explained that patients who have a deep understanding and sufficient knowledge about diabetes mellitus often show a higher level of involvement in carrying out the necessary self-care practices. This comprehensive and in-depth knowledge can increase a person's level of self-confidence, provide a solid foundation for making informed decisions, and enable them to better adapt their lifestyle to suit the management required to manage diabetes mellitus more effectively.

2. The influence of social support on self-care practices

This study shows that social support increased self-care practices in diabetes patients. The results of this study is in line with Sharoni et al. (2015) that collaboration between health service providers and the involvement of family members is needed to provide good social support to improve the ability to practice self-care in diabetes patients.

Patients suffering from Diabetes Mellitus and receiving social support tend to be more likely to engage in self-care compared to their peers, as was also concluded in a study that parallels the results of a study conducted in Ethiopia (Emire et al., 2022).

This is believed to be because social assistance provided by family, friends and other individuals has a significant role in reducing worry, empowering and supporting diabetes patients in carrying out their self-care. Mohebi (2018) stated that self-care and social support have a significant correlation so that patients who have good social support have good achievements in self-care. Diabetes patients who are cared for by family and receive support from friends and family during illness, have higher levels of diabetes self-care compared to those who do not have caregivers during illness, or are cared for by others (Ishak et al, 2017).

Therefore, care interventions with family or social partnerships should be included in diabetes management, especially in elderly diabetes patients, to promote optimal clinical outcomes.

3. The influence of gender on self-care practices

This study shows that female has a high probability of diabetes self-care practices than male. The results of this study are in line with research by Siddiqui et al. (2013) this may occur because women have more positive attitudes towards the disease and its management and make greater use of diabetes services and seek diabetes care more often than men.

Mohebi (2018) stated that there is a significant relationship between self-care practices and several demographic variables including gender. Self-care practices in women are greater than men, and higher self-care practices are found in married people and also people who have academic education.

This is align with Mekonen and Gebeyehu Demssie (2022) which states that women tend to be better trained in carrying out self-care practices, namely foot care which is important to prevent ulceration. These practices include drying between the toes after washing, performing regular foot examinations, practicing proper nail trim m-ing to prevent injuries, avoiding walking barefoot, and keeping feet clean to reduce the risk of infection.

Tuha et al. (2021) stated that this factor could be caused by women often feeling they have greater responsibility in carrying out self-care. Moreover, there is a tendency for men to have unhealthy habits, such as wearing open shoes, which can increase the risk of diabetic foot ulcers because it increases the possibility of slipp-ing, exposure to external trauma and result-ing injury to the toes or bottom of the foot.

4. The influence of comorbidities on self-care practices

Current study show that comorbidities increase the likelihood of implementation of self-care practices in diabetes patients, but it was statistically non significant. Patients who have comorbid chronic diseases often face various obstacles in carrying out their self-care practices. Having comorbidities allows patients with diabetes to focus more on other diseases so that are obstacles in implementing diabetes care practices.

These barriers may include physical limitations that affect their ability to care for themselves, lack of knowledge regarding their health condition, financial constraints that may hinder access to necessary care, the need for social and emotional support to overcome the challenges they face, and feelings of frustration related to symptoms or treatment that may be differrent from others and in some cases, the use of multiple medications (polypharmacy) (Tuha et al., 2021).

It is important to note that comor-bidities or comorbidities may influence the relationship between a patient's level of self-efficacy and their ability to maintain self-care. Therefore, there needs to be self-management interventions that can address

the complex interactions between existing chronic conditions and comorbidities that individuals have, so that patients can be more effective in carrying out their self-care practices.

AUTHORS CONTRIBUTION

Alimah Ulfah Khairiyyah as the main author designed the research, carried out article searches and analyzed the data. Rajba Nazalah, Stefanus Aditya, Bhisma Murti, and Etanaulia Marsim reviewed the selected articles.

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CONFLICT OF INTEREST

There is no conflict of interest in this study.

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