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Nurse Assessment Tools for Recognizing Depression in Diabetes Patients

A Descriptive Literature Review

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The purpose of the thesis was to identify the assessment tools available to nurses for recognizing depression in diabetes patients. The aim of this thesis was to improve the knowledge of healthcare professionals regarding depression in diabetes patients and contribute to improved patient outcomes and care for individuals experiencing comorbid depression and diabetes.

This bachelor's thesis is a descriptive literature review that utilized a directed and summative content analysis approach. Our research foundation was based on reputable academic databases and e-resources provided by Metropolia University of Applied Sciences. PubMed, CINAHL-EBSCO, and Google Scholar are the databases used in this descriptive review.

Our final sample included 18 articles. An analysis of these articles answered our research questions "What are the assessment tools that can be used to recognize depression in diabetes patients?" and "How depression can be recognized in diabetes patients?" To answer these questions, we employed inductive content analysis to systematically analyze and categorize relevant information from the 18 articles identified through the database searches. This process allowed us to generate sub-categories and main-categories that are reflected in our results, providing a structured understanding of the various assessment tools and protocols used to recognize depression in diabetes patients.

Our analysis showed that nurses can use self-report questionnaires to recognize depression in diabetes patients. In particular, our analysis identified the Patient Health Questionnaire-9 (PHQ-9) and its variations as widely used and validated tools for recognizing depression in diabetes patients. These self-report questionnaires were found to be reliable across diverse cultural and healthcare settings. Additionally, the analysis highlighted the potential of structured depression screening protocols in primary care, which facilitate early detection and timely intervention. However, challenges remain, including inconsistent adherence to these protocols and resource constraints in clinical practice. These findings underscore the need for ongoing research and improved implementation strategies.

In conclusion, depression screening in patients with diabetes is a complex attempt due to the overlapping symptoms of these conditions and the potential pitfall of assessing diabetes distress rather than true depression. Healthcare professionals should consider a holistic approach, taking into account both the emotional burden of diabetes and the potential for true clinical depression. Future research and tool development should aim to refine the screening process, minimizing false-positives and ensuring that individuals receive accurate diagnoses and appropriate care.

Keywords	assessment tools, depression, diabetes

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1 Introduction

Diabetes and depression are two prevalent and interconnected health conditions that pose significant challenges to individuals and healthcare systems worldwide. Direct health expenditure associated with diabetes and its treatment is estimated to be almost trillion dollars annually. (IDF Diabetes Atlas 2021.) It is estimated that 10.5% of the global adult population (20-79 years) has diabetes (IDF Diabetes Atlas 2021). The number of people suffering from diabetes has risen year by year. The International Diabetes Federation IDF Diabetes Atlas estimates that around 643 million people will have diabetes by 2030 (IDF Diabetes Atlas 2021). Therefore, research on the subject can provide insights that may be valuable on both the individual and on the societal level. This thesis is a descriptive literature review that identifies the assessment tools available to nurses for recognizing depression in diabetes patients.

Millions of individuals globally suffer from diabetes mellitus, which is a chronic metabolic disease defined by high blood sugar levels that significantly impacts quality of life. Meanwhile, depression is a complex and crippling mood illness defined by prolonged unhappiness and helplessness as well as an absence of interest and enjoyment from things that used to be enjoyable (American Psychiatric Association 2013). As the number of people with diabetes rises, research has increasingly recognized its association with various comorbid conditions such as depression (Anderson, Freeland, Clouse and Lustman 2001:1069; Nouwen et al. 2011:752-762). An estimated 3.8% of the global population experience depression (WHO 2023). These two conditions share a complex and bidirectional relationship, with each condition increasing the risk and severity of the other (Anderson et al. 2001:1069; Nouwen et al. 2011: 752-762).

The coexistence of these two conditions has the potential to substantially compromise patients' health outcomes (Egede, Zheng and Simpson 2002: 464-470). As a result, the timely identification and appropriate management of depression in those who have diabetes are of utmost importance. However, accurately recognizing depression's existence in diabetic patients can be a challenging task due to the overlapping symptoms and the intricacies associated with providing diabetes care (Fisher, Glasgow, Mullan, Skaff and Polonsky 2008: 246-252; Lustman et al. 1997: 24-31).

The purpose of this thesis for Metropolia University of Applied Sciences nursing degree program is to carry out a descriptive literature review to identify the assessment tools that nurses can used to recognize depression in diabetes patients. The focus of this thesis is on describing the assessment tools available for recognizing depression in diabetes patients. The aim of this thesis is to consolidate existing knowledge on the topic and provide a summary of the topic for healthcare professionals, which may contribute to improved patient outcomes and care for individuals experiencing comorbid depression and diabetes. By bridging the existing knowledge gap, our research seeks to improve patient care and outcomes in cases of comorbid depression and diabetes. Ultimately, we aim to positively impact the overall well-being and quality of life for these patients. We aspired to improve the knowledge of healthcare professionals regarding depression in diabetes patients and contribute to the improvement of patient care.

2 Background

2.1 Diabetes care in nursing

Diabetes is a long-term medical condition characterized through chronic high levels of glucose in the blood with disorders of fat, protein, and carbohydrates caused by flaws in insulin action, secretion, or both (Bennett and Knowler 2007: 331).

Type 1 and type 2 diabetes are the two main forms of the disease. Diabetes type 1 arises due to inadequate insulin production within the body, necessitating insulin administration (WHO 2023). In contrast, diabetes type 2 stems from the body's cells failing to respond adequately to insulin. It represents the majority, approximately 95%, of worldwide diabetes cases (WHO 2023).

Diabetes mellitus can cause long-term harm, dysfunction, and organ failure, particularly to the kidneys, heart, blood vessels, eyes, and heart. Polyuria, loss of weight, blurred vision, dehydration, and polyphagia are all signs of diabetes. Symptoms are frequently not severe or may not even exist. (Bennett and Knowler 2007:331.)

Nurses play a crucial role in diabetes care by providing patient education, managing treatment plans, and coordinating care across different clinical, social, and educational settings. Nurses are seen as capable of leading in diabetes treatment and care education, as demonstrated by clinical trials showing their effectiveness and cost-efficiency.

Utilizing nurses' expertise in various healthcare settings can reduce unnecessary referrals to specialists, thereby easing the social burden. (Peimani, Tabatabaei-Malazy and Pajouhi 2010: 2-4.)

2.2 Depression care in nursing

Depression is a prevalent and serious mental disorder with a wide-ranging impact on individuals' lives. A combination of multiple distinct symptoms is what indicates major depression (Strakowski and Nelson 2015: 6). Major depressive disorder is commonly characterized by chronic sadness or low mood, loss of interest in enjoyable activities, exhaustion or low energy, feelings of uselessness or lack of self-worth, excessive guilt or self-blame, changes in eating habits and weight, mental instability or retardation, stress and nervousness, insomnia, trouble concentrating or making decisions, bodily symptoms (such as headaches or back pain), despair, and thoughts of suicide or behaviors.

One of the direst consequences of major depression is suicide (Strakowski and Nelson, 2015: 8). Major depressive disorder patients have an overall risk of approximately 8% for suicide, and those who do not receive treatment may be up to five times more likely to commit suicide than those who do. These findings were reported by Strakowski and Nelson (2015).

In addition, major depression can result in significant impairment in an individual's ability to work. Symptoms such as fatigue, reduced concentration, and decreased motivation can lead to lost work performance (Kessler et al. 2006:1564). Furthermore, the economic burden associated with workplace productivity losses due to depression is substantial and affects both employees and employers (Kessler et al. 2006: 1564).

While it can affect anyone, it is more common in women than in men. It is often associated with a history of trauma, severe losses, or exposure to stressful events (WHO 2023).

Nursing care of depressed clients is provided using the six steps of the nursing process, which are: Assessment, diagnosis, outcomes identification, planning, implementation, and evaluation. (Townsend 2014: 151.) One of the nursing interventions with a depressed client is to encourage the client for his or her own self-care practices.

Providing the client with choices will increase feelings of control. (Townsend 2014: 480.) Client and family education are essentials to depression. Topics for client and family education related to depression are nature of illness, management of illness and support services depression management (Townsend 2014: 480).

2.3 Comorbid depression and diabetes

Academic research has addressed the co-occurrence of depression and diabetes. Several studies over the years have pointed out a bidirectional link between diabetes and depression (Egede and Ellis 2010: 304; Egede and Zheng 2003: 104; Pouwer, Nefs and Nouwen, 2013: 529 and Lin, et al. 2010: 264).

Research indicates that people with diabetes have a twice-higher risk of depression than those without the disease (Anderson, Freedland, Clouse and Lustman 2001: 1069-1076; Holt, de Groot and Golden 2014: 491), although the evidence is not conclusive (Nouwen et al. 2011: 752-762). Nevertheless, there is evidence that people with both diabetes and depression comorbidly have a notably higher likelihood of experiencing adverse patient outcomes than those with just diabetes or depression (Ciechanowski, Katon and Russo 2000: 3278-3285; de Groot, Anderson, Freedland, Clouse and Lustman 2001: 619-630; Egede 2004: 421-428; Lustman et al. 2000: 934-942).

2.4 Assessment tools for recognizing depression

Screening is the methodical use of a test or assessment to identify people who are sufficiently at risk of a particular condition who can be helped by further investigation or proactive intervention (British Medical Bulletin 1998: 767-778). Therefore, depression assessment tools aid in the estimation of depression prevalence within epidemiological studies and also for the screening, diagnosis, and treatment monitoring of patients in clinical settings (Behera et al. 2017: 31-37).

Assessment tools can be self-report questionnaires or interviews (American Psychological Association 2023). They are primarily used by clinicians, researchers, and other professionals to diagnose depressive disorders, monitor treatment progress, or study the prevalence and impact of depression in various populations. While psychiatric expertise can be beneficial for diagnosing and treating major depression, clinicians with

other areas of expertise can still play a significant role in identifying and screening patients who may be experiencing depression. Clinicians in various medical specialties can effectively administer assessment tools and recognize signs and symptoms of depression, allowing for timely referrals to mental health specialists for further evaluation and treatment. This collaborative approach to mental health care ensures that patients receive comprehensive care and support, regardless of the clinician's specific area of specialization. (Schnall. R. et al. 2010: 703-712.)

2.5 The role of the nurse in recognizing depression in diabetes patient

Depression is a prevalent comorbidity among individuals with diabetes, significantly impacting their overall well-being and complicating the management of their chronic condition (Ciechanowski et al. 2000: 3278-3285; de Groot et al. 2001: 619-630; Egede, 2004: 421-428; Lustman et al. 2000: 934-942). Nurses play a crucial role in recognizing, identifying, and providing care for depression in diabetes patients, since they work in close and continuous contact with patients. This proximity places nurses in a unique position to observe subtle changes in behavior, mood, and overall well-being. Given their frontline role, nurses play a pivotal part in recognizing early signs of depression in diabetes patients, enabling timely intervention and contributing significantly to improved mental health outcomes. This chapter explores the nurse’s role in recognizing depression in diabetes patients.

First, nursing mandates a holistic approach to patient care (Townsed 2014: 537). The nurse's role in recognizing depression in diabetic patients involves conducting comprehensive assessments that consider both physical and psychological dimensions. By employing frameworks such as Gordon's Functional Health Patterns (Cassia and Butcher 2021: 295), nurses systematically evaluate the patient's health, incorporating aspects of mental health and emotional well-being. This holistic perspective facilitates the early detection of subtle signs and symptoms indicative of depression within the diabetic population.

Second, systematic monitoring of patients' mental health status is a key responsibility of nurses. Regular assessments, incorporating validated depression screening tools such as the Patient Health Questionnaire-9 (Kroenke, Spitzer & Wlliams 2001: 606-607; Löwe, Kroenke, Herzong and Gräfe 2004: 61-62), enable nurses to systematically monitor and track changes in depressive symptoms over time. Nurses often administer

these tools and interpret the results within the diabetes context. The implementation of such evidence-based tools not only facilitates consistent and standardized assessments but also enhances the nurse's ability to identify subtle changes indicative of depression (Kroenke et al., 2001: 606-607; Beck, Ward, Mendelson, Mock & Erbaugh 1961: 561-571). This approach ensures a comprehensive and evidence-based evaluation of the patient's mental health status, contributing to timely and targeted interventions in the management of depression in individuals with diabetes.

Third, nurses must recognize the risk factors associated with depression in diabetes patients. Numerous studies have identified factors such as being overweight, diabetes-related complications, and the psychosocial impact of chronic illness as contributors to the elevated risk of depression in this population (Albasheer et al, 2018: 117; de Groot et al. 2001: 619-630 and Katon et al. 2004: 914). Recognizing and addressing these risk factors empower nurses to proactively assess and intervene, aligning with the principles of nursing theories that emphasize a holistic understanding of patient health.

Furthermore, a comprehensive understanding of depressive symptoms is fundamental for nurses in recognizing depression in diabetes patients. The symptoms may extend beyond typical psychological manifestations to include changes in appetite, sleep disturbances, and diminished energy levels (Videbeck 2017: 489). It is pivotal to understand that many of the symptoms of diabetes distress overlap with the symptoms of major depression (Lloyd 2010: 2-15, Fisher, Chan, Nan, Sartorius and Oldenburg 2012: 56-61). Nurses can systematically assess patients and discern deviations indicative of depression.

3 Purpose aims and research questions

The purpose of this thesis is to identify the assessment tools available to nurses for recognizing depression in diabetes patients.

The aim of this thesis is to improve the knowledge of healthcare professionals regarding depression in diabetes patients and contribute to the improvement of patient care.

Our research questions are:

1. What are the assessment tools that can be used to recognize depression in diabetes patients according to scientific literature?

2. How depression can be recognized in patients with diabetes using the assessment tools?

4 Methodology and methods

We chose a descriptive literature review to thoroughly prove the degree to which an accumulation of knowledge in nurse assessment tools for depression in diabetic patients displays any readable pattern or tendency in connection with previously identified data (Paré, Trudel, Jaana and Kitsiou 2015: 186-192). Descriptive research is similar to taking a photograph of a situation. It does not attempt to explain why things happen, but rather just describes what is happening (Aggarwal and Ranganathan 2019: 34-36). In essence, during a descriptive literature review, every study is treated as a separate piece of data. The authors combine all the studies to discover patterns and trends, followed by utilizing their findings to draw conclusions about the present state of knowledge in that specific topic (Paré et al. 2015: 183-199).

Descriptive reviews employ a methodical and systematic approach to identifying, selecting, and classifying studies. They also extract important details from each study, such as the year of publication, research methodology, data collection methods, including the research results (positive, negative, or neutral). These details are examined to give quantitative results. (Sylvester, Tate and Jhonstone 2013: 1199-1215.)

Descriptive research, regardless of its type, tends to be basic and simple to carry out. Case studies, case series, and ecological studies frequently use existing data, which makes them very simple to implement. Cross-sectional studies, on the other hand, gather information from a single encounter, thereby simplifying the study procedure. As a result, descriptive research is frequently cost-effective, time-efficient, and requires little work. Furthermore, unless the material acquired is critical or confidential, these studies are often not subjected to thorough ethical examination. (Aggarwal et al. 2019: 34-36.)

4.1 Data collection method

This section discusses the data sources and data collection methods employed throughout this study. It contains details regarding the source databases, the search strategy utilized, and the inclusion and exclusion criteria set in place. We utilized electronic databases, namely CINAHL and PubMed, to find and select studies and publications as data for this descriptive review. We then derived the search terms used in the electric databases using the PICo-analysis.

The search terms used in the electronic databases were “assessment tool*” AND diabete* AND depression, diabetic OR "diabetes type 1" OR "diabetes type 2" OR T2DM OR T1DM, screening OR identify* OR diagnose* OR distinguish* OR detect*, “depressive symptoms” OR “depressive disorder” OR MDD. A more detailed description of the keywords and search terms can be found in Appendix 1.

PICo framework was used for planning our search strategy. The PICo framework is presented in Table 1 below. In addition, FACET analysis was used to identify appropriate search terms (Annex 1). The PICo in our study described as “Patient Group” refers to the patient group targeted for this intervention, it consists of individuals who meets specific criteria or characteristics. These criteria may include factors such as age, medical condition, or other relevant demographics. The “Interest” in our study focuses on identifying and recognizing diabetic patients who are experiencing depression. This aims to ensure that appropriate support and treatment can be provided to address their mental health needs. While “Context” is the desired outcome for patients with diabetes and comorbid depression, and to check reliable or valid assessment tools that will enhance their overall well-being and improve their emotional state. The goal is to recognize depression, to alleviate their depressive symptoms and help them experience a greater sense of contentment and enhanced quality of life.

Table 1. PICo

Patient Group	Adults with diabetes
Interest	Recognizing depression
Context	Assessment tools

This strategy is utilized by us to narrow down to a specific outcome, maximizing efficiency and effectiveness in our approach to learning and acquiring knowledge. Through the employment of this method, the aim is to identify and prioritize the most relevant and impactful study techniques, optimizing our study outcomes, and achieving tremendous success in our research.

Table 2. FACET

Population/ Diabetes	**AND**	Exposure/ Assessment tools	**AND**	Outcome/ Depression
OR Diabetic		**OR** Identifying		**OR** depressive symptom
OR Diabetes type 1		**OR** Screening		**OR** depressive disorder
OR Diabetes type 2		**OR** Diagnosing		**OR** depressive disorder
OR T2DM		**OR** Distinguishing		**OR** MDD (Major depressive disorder)
OR T1DM		**OR** Detecting		

4.2 Inclusion and exclusion criteria

To maintain a sharp focus and relevance to the thesis topic, this descriptive review includes publications that primarily discuss assessment tools for recognizing depression in diabetic patients and answer to the research questions of this thesis. The selection criteria for the publications used in this descriptive review are as follows.

First, only recent publications from 2013 onwards are included, ensuring that the descriptive review captures contemporary practices, tools, and findings. Emphasis was placed on peer-reviewed studies to focus the results and to increase the reliability of the data. Additionally, only electronically available studies were included in the data, ensuring easy accessibility, efficient retrieval, and reproducibility of the review process.

The language of the publications was limited to English and publications in other languages were excluded from this literature review. However, cultural factors might affect depression and literature reviews on the topic in language other than English might be helpful in the future to understand complex interplay of depression and diabetes.

Finally, the focus group of this literature reviews was limited to the adult population, which is defined as adults, that is, at least 18-year-old persons, to focus the scope of the thesis and to narrow down the topic. Furthermore, this patient population is the principal group that suffers from diabetes. Therefore, publications that consider paediatric or adolescent patients were excluded from this descriptive review. Focusing on adults ensures that the assessment tools and findings are directly applicable to the main demographic of diabetic patients. Table 3 describes and summarizes the inclusion and the exclusion criteria.

Table 3. Inclusion and Exclusion List

Criteria	Inclusion	Exclusion
Language	Studies published in English.	Studies published in other languages
Peer-reviewed	Peer reviewed publications	Dissertations, manuscript, thesis, and other non-peer reviewed publications
Research topic	Publications that respond to the research questions of the thesis	Publications do not respond to the research questions of the thesis
Publication date	Studies published from 2013 or later	Studies published before 2013
Availability	The studies and publications that are available electronically	The studies and publications that are not available electronically
Mental Health topic	Publications or parts of publications that consider depression	Publications or parts of publications that consider other mental health conditions
Focus group age	Studies and publications considering adults (Over 18-year-olds)	Publications that consider pediatric patients or adolescents
Types of study	Narrative literature reviews	Systematic literature review
Other type of measures for detecting depression	Screening tools, assessment tools, questionnaires	Biomarkers

The reviewers obtained 776 hits from CINAHL and 1797 hits from PubMed. Out of these hits, 2350 were selected based on the title. From these, 115 hits were further filtered based on the abstract. Additionally, 13 hits were excluded due to language restrictions, and 29 hits were excluded because the full text was not available. After this rigorous screening process, a final selection of 35 articles was made based on the full text.

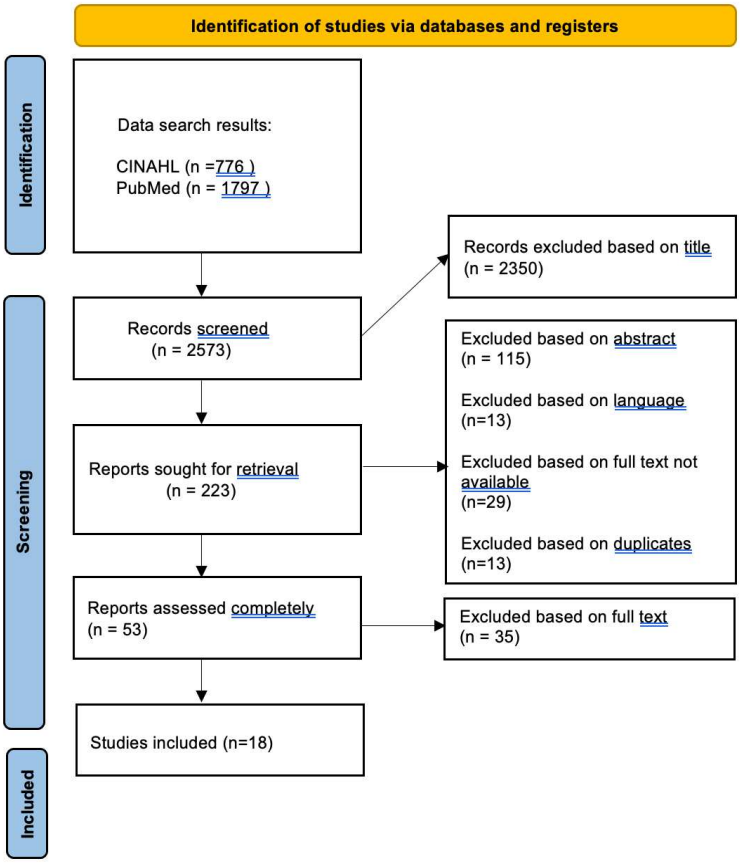

Figure 1. PRISMA Flow Diagram

Reviewers obtained a total of 18 articles to conduct the study. The articles were selected according to the inclusion and exclusion criteria mentioned in table 3 above. The total number of articles was obtained 18, after removing duplicate articles 18 articles were selected. Figure 1 presents the Prisma Flow Chart of the study selection process.

4.3 Data analysis

This chapter outlines the data analysis method employed in this descriptive literature review. The objective of this thesis is to provide a comprehensive description of the factors associated with recognizing depression in patients with diabetes, derived from the collected data. To achieve this, we applied inductive content analysis as described by Braun and Clarke (2006: 83) and Kyngäs (2020: 13-23), which involves identifying, analyzing, and reporting patterns or themes within the data. It is important to note that, as Kyngäs (2020: 13) emphasizes, conceptual maps generated from content analysis outcomes can depict a phenomenon, but they do not offer an explanation for it.

We employed inductive content analysis, a qualitative research technique used to identify themes, patterns, and categories that emerge directly from the data (Kyngäs 2020: 14). This approach was suitable for our study as there is no clear consensus or established theory on how to recognize depression in patients with diabetes. The inductive method allowed us to systematically scrutinize the selected studies and draw conclusions directly from the research material.

The first step in our analysis, as outlined by Braun and Clark (2006:83), was the immersion in the data through a thorough reading of all 18 papers included in the review. Each paper was read independently by both researchers, ensuring that each researcher formed their own understanding of the content. This involved repeatedly reading the texts, highlighting relevant portions, and taking detailed notes on key points related to the recognition of depression in diabetes patients.

During this phase, we identified meaning units—segments of text relevant to answering our research questions, "What are the assessment tools that can be used to recognize depression in diabetes patients?" and “How depression can be recognized in patients with diabetes?” These meaning units varied in length, ranging from single words and sentences to longer paragraphs, depending on the depth of the content. This step allowed us to define the characteristics of the content that we wanted to measure, as outlined by Kyngäs (2020: 13-14).

Then we began by coding the data through a process of open coding, in which we systematically labeled each meaning unit with a descriptive code. As described by Hsieh and Shannon (2005: 12), open coding involves assigning descriptive labels to each unit of analysis, capturing the core meaning. For example, when an article described the PHQ-9 as a screening tool for depression, we assigned the code “PHQ-9”. In the same way, if an article described for instance the diagnostic properties of an assessment tools, we assigned the code “diagnostic property”. Table 4 provides an example of our coding process.

After generating initial codes, we categorized these codes into broader sub-categories and generic categories (Kyngäs 2020: 14). Codes that shared similar themes or addressed similar aspects of depression assessment were grouped together. For example, codes related to various self-report questionnaires—such as PHQ-9, PHQ-2, and HADS—were combined into a sub-category called "self-report questionnaires." These

sub-categories were then further grouped into generic categories, such as "assessment tools" and "screening protocols," which aligned with our research questions.

This step required ongoing refinement of the coding scheme. Both researchers worked together to ensure that the categorization of codes accurately reflected the data, and any discrepancies were resolved through discussion. Collaborative coding helped to mitigate the risk of bias, ensuring that the categories formed were consistent and meaningful.

Finally, we engaged in the process of synthesizing the sub-categories into broader main categories (Kyngäs 2020: 14). This phase involved summarizing the key themes and findings from the analysis into overarching categories that addressed our research questions. For example, the sub-categories related to depression screening tools were abstracted into the broader category of "depression assessment tool," while those related to organizational aspects of screening were grouped under "screening protocols."

By grouping and refining the categories, we were able to create a structured and simplified representation of the data, making it easier to understand the range of tools and protocols available for recognizing depression in diabetes patients. This phase allowed us to provide a general description of the findings, moving from specific codes and sub-categories to more generalized themes and categories.

In summary, the use of thematic content analysis allowed us to systematically categorize the data from the reviewed studies, providing a structured understanding of the tools and protocols used to assess depression in diabetes patients. By following the steps of preparation, organization, and abstraction as described by Kyngäs (2020: 13), we ensured that our analysis was data-driven and reflective of the available literature. The final categories derived from this process directly addressed the research questions and formed the basis of our conclusions.

Table 4. An example of content analysis in this study

Article	Meaning Unit	Coding	Sub-category	Generic category	Main category
1.	"The Hospital Anxiety and Depression Scale (HADS) was devised 30 years ago by Zigmond and Snaith [1] to measure anxiety and depression in a general medical population of patients."	HADS	Self-report questionnaire	Assesment tool	What are the assessment tools that can be used to recognize depression in diabetes patients?

5 Results

This chapter reports the key findings and results of the data analysis for the descriptive literature review. The primary research questions driving this descriptive review were, "What are the assessment tools that can be used to recognize depression in diabetes patients?" and "How depression can be recognized in diabetes patients?" To answer these questions, we employed inductive content analysis to systematically analyse and categorize relevant information from the articles identified through the database searches.

The data analysis of this descriptive literature review encompassed 18 selected articles that contribute insights into the recognition of depression in diabetes patients. The articles included in this descriptive literature review were published in Australia (Halliday et. al 2017, Davis et. al 2018), in the USA (Willborn et al. 2016; Bajracharya et al. 2016; Palmer et al. 2015; Fisher et al. 2015), in the Netherlands (Janssen et al. 2016; Rauwerda et al. 2018), in Greece (Hyphantis et al. 2015), in the UK (Twist et al. 2013), in Singapore (Tay et al. 2023), in Poland (Kokoszka et al. 2020; Cichoń et al. 2020), in China (Zhang et al. 2013), in Taiwan (Hsu et al. 2014), in Canada (Carter et al. 2016), and in Spain (Carreira et al. 2021), and they encompass diverse diabetes patient populations. All studies were published between 2013 and 2023.

Using inductive content analysis, two main categories were identified from the data: “Assessment tools for recognizing depression”, which includes three sub-categories and “Screening protocols for identifying depression in diabetes patients”, which includes four sub-categories. The systematically grouped key themes from the analysis are presented in Table 5.

Table 1. Results of the inductive content analysis.

Sub Category	Generic Category	Main Category
Diabetes-specific tools	Assessment tool	What are the assessment tools that can be used to recognize depression in diabetes patients?
Self-report questionnaire		
Well-being index		
Implementation	Screening protocols	How can depression be recognized in patients with diabetes using assessment tools?
Lack of screening		
Patient-related factors		
Staff-related factors		

The methods employed in the 18 articles range from quantitative analyses to program evaluations and qualitative assessments. These studies primarily utilize established depression screening tools such as the Patient Health Questionnaire (PHQ-9), Problem Areas in Diabetes (PAID-5), and Beck Depression Inventory II (BDI-II) to explore their efficacy in identifying depression among individuals with diabetes.

However, certain limitations are prevalent across the studies. Common limitations include sample size constraints (Tay et al. 2023; Kokoszka et al. 2020; Zhang et al. 2013; Hsu et al. 2014; Cichoń et al. 2020; Carter et al. 2016; Carreira et al. 2021), potential selection bias, and the predominance of specific sample populations, limiting the generalizability of findings. Additionally, variations in study designs, assessment tools, and populations hinder direct comparison.

The absence of a universally agreed-upon definition of depression in academic research complicates the comparison and the consolidation of research findings. For example, Halliday et al. (2017) examined the psychometric properties of the WHO-5, utilizing this instrument to define depression in Australian adults with diabetes, but they did not compare the WHO-5 against a clinical diagnostic interview due to the survey methodology. However, for example Twist et al. (2013) conducted a comparison of

PHQ-9 item distribution in adults recently diagnosed with Type 2 diabetes, using a Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) diagnosis of depression as a benchmark. That is, there is a lack of a clear definition of depression in the academic literature on the topic.

5.1 Self-Report Questionnaires

The inductive content analysis process revealed a list of a variety of assessment tools that nurses can use to recognize depression in diabetes patients. The assessment tools identified in the selected articles encompass various types and methodologies for evaluating depression in patients with diabetes.

Assessment tools and the frequency of mentions as suitable for recognizing depression in diabetes patients in the selected articles are presented in the table 6 below.

Table 6. The frequency of mention of the depression assessment tools in the data.

Assessment tool	**Frequency of mentions**
PHQ-9	9
PHQ-8	1
PHQ-2	2
WHO-5	3
BDI-II	2
BS-RSDA	1
CES-D	1
CUDOS	1
DADS	1
DID-I	1
HADS	1
PAID-5	1

Several tools, such as PHQ-9, PHQ-8, PHQ-2, BDI-II, CES-D, HADS, CUDOS are self-report questionnaires. They rely on patients' self-assessment of their emotional well-being and the presence of depressive symptoms (Bajracharya et al. 2016; Carter et al.

2016; Chichon et al. 2020; Fisher et al. 2015; Hsu et al. 2014; Hyphantis et al. 2015; Janssen et al. 2016; Palmer et al. 2015 ; Twist et al. 2013; Willborn et al. 2016 and Zhang et al. 2013).

From the table, it is evident that the Patient Health Questionnaire-9 (PHQ-9) was the most frequently mentioned assessment tool. This underscores its prominence in the literature for assessing depression in diabetic populations. The World Health Organization Five Well-being Index (WHO-5), Beck Depression Inventory-II (BDI-II), and PHQ-2 also received notable mentions.

5.1.1 Patient Health Questionnaire (PHQ)

This chapter discusses the Patient Health Questionnaire-9 (PHQ-9) and its variations the PHQ-8 and the PHQ-2 as depression screening tools for patients with diabetes and their validity as screening tools in different countries, as evidenced in the included articles of this descriptive review. PHQ-9 stands as a prominent assessment tool and emerged as the most frequently mentioned instrument in the selected articles. The global validation of PHQ-9 for diabetes patients underscores its utility and cross-cultural applicability, and its significance in identifying depressive symptoms among people with diabetes.

The Patient Health Questionnaire-9 (PHQ-9) is a self- reported questionnaire that consists of the nine depression items from the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). According to a recent meta-analysis, the PHQ-9 can accurately diagnose major depression in patients with long-term medical conditions. This highlights the usefulness of the PHQ-9 as a tool for case identification in this population. (Kroenke, Spitzer and Williams 2001.)

There are different versions of the Patient Health Questionnaire. The main difference among the versions lies in the number of items and the depth of assessment. The choice of which version to use depends on factors such as the clinical context, the depth of information needed and the time available for screening.

The Patient Health Questionnaire 8 (PHQ-8) is a self-report questionnaire with eight questions, that is, it has one question less than the more common PHQ-9. The only difference between the PHQ-9 and the PHQ-8 is item 9, which evaluates suicidal

thoughts and self-harm. PHQ-8 is a valid and accurate way to diagnose and assess the severity of depression in large clinical trials. (Kroenke et al. 2009: 163-173). However, according to our descriptive review, we found that the PHQ-8 shows a high false-positive rate for depression. (Fisher et al. 2016: 1590-1597.)

Furthermore, there is an even simplified version of the Patient Health Questionnaire, the PHQ-2, which is a two-item self-report survey. It is a valid and reliable measure of depression, and it has been shown to be effective in identifying individuals who are at risk for depression. The initial two questions of the PHQ-9 are integrated into the PHQ-2. It is intended to serve as a preliminary screening tool followed by the comprehensive PHQ-9 assessment and diagnostic interviews. (Sedeeq, AlTamimi, Hamed and Syed 2022:1-3.)

This descriptive review identified that research to validate the utility of PHQ-9 as a suitable screening tool for depression in diabetes patients has been conducted in multiple countries. In China, Zhang et al. (2013) conducted a study confirming the PHQ-9's validity and reliability as a depression screening tool for Chinese outpatient diabetes patients. Similarly, in Greece, Hyphantis et al. (2015) explored the applicability of PHQ-9 and established its effectiveness as a depression screening tool for Greek diabetes patients in an Accident and Emergency Department while Janssen et al. (2016) conducted a validation study in the Netherlands, confirming the suitability of PHQ-9 for identifying depressive symptoms in Dutch individuals with diabetes. In Poland, Cichoń et al. (2020) supported the use of PHQ-9 as a reliable depression screening tool for diabetic patients within the Polish healthcare system.

Furthermore, Twist et al. (2013) investigated the validation of PHQ-9 in the United Kingdom and found it to be an effective tool for identifying depression among British Singapore individuals with diabetes, while Willborn et al. (2016) conducted a study endorsing PHQ-9 as a suitable screening tool for diabetes patients in the American healthcare setting. In Singapore, Tay, Chua, and Khoo (2023) affirmed the utility of PHQ-9 for identifying depressive symptoms among English-speaking individuals with diabetes in the Singaporean context.

In summary, the PHQ-9, validated across various countries, has been proven to be effective in identifying depression in diabetes patients. Zhang et al. (2013) in China, Hyphantis et al. (2015) in Greece, Janssen et al. (2016) in the Netherlands, Chicon et al.

(2020) in Poland, Twist et al. (2013) in the UK, Willborn et al. (2016) in the US, and Tay, Chua, and Khoo (2023) in Singapore affirmed its reliability and applicability in the diabetes patient population. These consistent validations underline PHQ-9's cross-cultural utility, demonstrating its robustness in identifying depression in individuals with diabetes. Nevertheless, the studies focused on type 2 diabetes patients, except for Hyphantis et al. (2015), which did not specify diabetes type.

5.1.2 Beck Depression inventory (BDI)

The Beck Depression Inventory (BDI) has become a viable screening instrument for identifying severe depression in individuals with diabetes. Initial studies have demonstrated its effectiveness in this specific population (Lustman et al. 1997: 24-31). However, to establish its precise performance characteristics and evaluate its applicability in the general clinical setting, further rigorous prospective studies are necessary (Lustman et al.1997).

5.1.3 Center for Epidemiologic Studies depression scale (CES-D)

The CES-D scale is made up of twenty items originally derived from earlier depression scales. Its purpose it to assess symptoms associated with depression in general population (Radloff 1977: 385-401).

One article that utilized CES-D found that the 14-item CES-D is an effective and trustworthy tool to evaluate symptoms of depression in adults with type 2 diabetes. However, the total score from the CES-D could be affected by certain factors such as the person's age, whether they were male or female, and their body mass index. Additionally, the CES-D might mix up negative feelings and physical symptoms, making it difficult to separate the two. The researchers concluded that even though CES-D is a useful tool for assessing depression in people with Type 2 diabetes, it might overstate the level of depressive symptoms. They also suggested that while the CES-D is valid, its use in clinical settings might require more research to better understand how it should be applied. (Carter et al. 2016: 91-97.)

5.1.4 Hospital Anxiety and Depression Scale (HADS)

The Hospital Anxiety and Depression Scale (HADS) is a straightforward, quick, and easy-to-use tool that assesses both anxiety and depression, with a total of 7 questions for each category, and takes just 2-5 minutes to complete. It is an extremely useful tool for the initial observation and evaluation of psychological symptoms. The National Institute for Health and Care Excellence recommends its use for diagnosing both depression and anxiety. (Stern 2014: 393-394.)

An article that used Polish cut-off points of the HADS scale indicates that the Hospital Anxiety and Depression Scale (HADS) performs well in depression screening among people who have type 2 diabetes. When utilizing optimal cut-off points for the Polish population, the HADS demonstrates high sensitivity, accurately identifying individuals with depression. This underscores the HADS scale's value as an effective tool for detecting depression in this specific population. The research emphasizes the importance of employing population-specific cut-off points to enhance the accuracy of depression screening. Initial results using English cut-off points were mixed, but the study's identification of the best cut-off points for the Polish population significantly improved the HADS scale's sensitivity. Overall, the results support the HADS scale to be useful and successful tool for identifying depressive symptoms in type 2 diabetes patients, emphasizing its potential influence on diagnosis and better treatment outcomes. (Kokoszka et al. 2020: 663-671.)

5.1.5 CUDOS

CUDOS is a self-assessment tool that includes 16–18 questions regarding major depressive disorder diagnostic criteria. Every question in CUDOS is rated on a scale of 0 to 4: 0 indicating “not at true”, 1 indicating “rarely true”, 2 indicating “sometimes true”, 3 indicating “often true”, 4 indicating “almost always true “(every day). The severity of depression increases with a higher score. (Ma et al. 2021: 2387-2395.)

A study, involving 214 participants, that examined how well patients with diabetes type 2 mellitus responded to the Clinically Useful Depression Outcome Scale (CUDOS-Chinese) in Mandarin Chinese demonstrated that the CUDOS-Chinese showed acceptable validity and reliability in detecting depressive symptoms in patients with type 2 diabetes in Taiwan. The research assessed the internal consistency, test-retest reliability,

concurrent validity, and construct validity of the CUDOS-Chinese. The CUDOS, a self-report questionnaire assessing depression symptoms, has been previously validated, but its performance in a Mandarin Chinese version for type 2 diabetic patients had not been explored. The study addressed this gap and found that the CUDOS-Chinese exhibited good internal consistency, test-retest reliability, and concurrent validity. It also supported a four-factor model, indicating strong construct validity. When it came to identifying depression in patients with diabetes type 2, the CUDOS-Chinese cut-off score of 19/20 showed excellent sensitivity as well as specificity. The study concludes that the CUDOS-Chinese is an accurate and trustworthy tool for evaluating depression symptoms, enabling the identification of patients who might require to receive therapy for their depression if they are at-risk (Hsu, Kao, Wang, Chang and Tsai 2014: 1595-1604).

CUDOS is a trustworthy and accurate self-report tool that offers comprehensive information on major depressive disorder symptoms. Its validity and trustworthiness in different geographic areas and populations are deemed satisfactory, and it has been extensively translated into multiple languages. Additionally, it has been shown effective in assessing type 2 diabetes patients' depressive symptoms. (Ma et al. 2021: 2387-2395.)

5.2 Well-Being Index

5.2.1 World Health Organization 5 (WHO-5)

Among the tools that are most frequently used to assess subjective psychological well-being is the WHO-5. WHO-5 is a well-being index designed to assess overall psychological well-being and is used to identify depressive symptoms in diabetic patients (Cichoń et al. 2020; Halliday et al. 2017 and Rauwerda et al. 2018).

This concise questionnaire comprises five straightforward and non-intrusive questions, formulated positively to reflect an individual's positive well-being. Furthermore, patients with severe depressive disorders were included in controlled clinical trials and the WHO-5 has been used as a measure of outcome in those trials. The WHO-5 was employed in these trials as an indicator to assess how effectively the intended clinical effects and any unfavorable side effects were balanced. (Topp et al. 2015: 167-176.)

5.3 Diabetes-Specific Tools

DID-I, BS-RSDA, PAID-5, DADS are diabetes-specific tools intended to assess emotional distress and depression in the context of diabetes management. These tools are tailored to the unique challenges faced by diabetic patients (Carreira et al. 2021 ; Kokoszca et al. 2020; Tay, Chua and Khoo 2023; and Davis et al. 2018).

5.3.1 DID-1

The Depression Inventory for Type 1 Diabetes (DID-1) stands as a dependable and valuable assessment tool for evaluating symptoms of depression in individuals with type 1 diabetes. The DID-1 examines seven major factors: signs of depression, loss of interest, despair and discontent, shame, anxiety, anger and irritation, helplessness, and disruption of daily life. It consists of 45 items that are evaluated on a scale that ranges from 1 to 7. (Carreira et al. 2021: 5.)

The development of The Depression Inventory for Type 1 Diabetes was written in an article. They specifically designed it for individuals with type 1 diabetes (T1D) who may experience depression more frequently than those without diabetes. Regular depression tests may not be as effective for this population due to the overlap of physical symptoms caused by T1D and depression. In a study involving 207 individuals with T1D, the researchers tested the DID-1, consisting of 45 questions. The questionnaire proved to be highly effective, demonstrating reliability over time and accurately distinguishing between individuals with and without depression. The DID-1 categorized responses into 7 groups or factors, providing insight into the various ways depression impacts people with T1D. (Carreira et al. 2021: 3-10.)

5.3.2 Brief Self-Rating Scale of Depression and Anxiety (BS-RSDA)

Brief self-rating scale of depression and anxiety is a self-reporting questionnaire with 10-item scale used to screen for depression and anxiety. This scale, which is based on the ICD-10's basic diagnostic criteria, consists of five items in subscales which tackle depressive symptoms and five more that address anxiety symptoms. (Kokoszka et al. 2020: 663.)

An article that used Polish cut-off points of the BS-RSDA scale indicates that The Brief Self-Rating Scale of Depression and Anxiety (BS-RSDA) showed good results when it came to diagnosing depressive symptoms in patients with type 2 diabetes. When the best cut-off points were used for the Polish population, the BS-RSDA showed high specificity, indicating its ability to correctly identify those without depression. This suggests that the BS-RSDA is a valuable instrument for excluding depression in this population. The researchers recommend that validated screening tools be used and that the cut-off points be adapted for the population being screened. The findings of this study are particularly relevant to the Polish population, but they also offer insights for broader application if validated elsewhere. (Kokoszka et al. 2020: 663-671.)

5.3.3 PAID-5

The PAID-5 is a valid and trustworthy tool for measuring emotional distress associated with diabetes. It is a five-item. Self-report questionnaire that is used to assess emotional distress associated with diabetes. The PAID-5 is a valuable tool for healthcare professionals to use to identify patients who may be experiencing emotional distress associated with diabetes. A study involving 208 adults with Type 2 diabetes indicated that the PAID-5 demonstrated high sensitivity in detecting depression. A score of 9 or higher on the PAID-5 was found to be a good indicator of depression, with a sensitivity of 88%. This means that the PAID-5 correctly identified 88% of participants who were diagnosed with depression. (Tay et al. 2023: 1129.)

5.3.4 DADS

Diabetes Anxiety Depression Scale is a 14 item self-report questionnaire that is used to screen for and assess the severity of anxiety and depression in people with diabetes (Davis et al. 2018: 2).

5.4 Recognizing depression in diabetes patients

The central research question of this descriptive literature review is, "How can depression be recognized in diabetes patients?" This chapter presents the results of the analysis, which reveal the availability of various assessment tools and the challenge of determining the optimal cutoff values for recognizing depression in diabetes patients.

This descriptive review identified many assessment tools that can be used to recognize depression in diabetes patients. The assessment tools were presented in the previous chapter. The analysis suggests that the Patient Health Questionnaire-9 (PHQ-9) is widely acknowledged as a suitable tool for recognizing depression in diabetes patient population. However, discrepancies exist regarding the ideal cutoff value, which raises a crucial issue concerning the balance between false positives and false negatives in depression screening.

5.4.1 The optimal cut-off points for identifying depression

Despite the widespread use of tools like the PHQ-9, a crucial challenge arises in determining the optimal cutoff values for screening depression in diabetes patients. This challenge is particularly evident in the discrepancies among different studies. For instance, Janssen et al. (2016) proposed a lower cutoff value of 5 for the PHQ-9, while Twist et al. (2013) suggested a higher cutoff of 12 for patients with early-onset diabetes. In general, most of the included studies that consider PHQ-9 suggest a cut-off of 5-7 for diabetes patients (Cichoń et al. 2020; Hyphantis et al. 2015; Janssen et al. 2016; Zhang et al. 2013).

The issue at the heart of this dilemma is the balance between false positives and false negatives. A lower cutoff, such as 5, may result in higher sensitivity, ensuring that individuals with depression are more likely to be identified. However, it may also lead to an increase in false positives, where patients without clinical depression are wrongly identified as having the condition. On the other hand, a higher cutoff, such as 12, enhances specificity, reducing the likelihood of false positives. Nevertheless, this approach may increase the risk of false negatives, as individuals with mild or moderate depression might not surpass the cutoff and remain undetected.

Hence, the challenge of selecting an appropriate cutoff value in depression screening necessitates a delicate balance between minimizing the risk of false positives and avoiding false negatives. For instance, Hyphantis et al. (2015) argued that ideally, there should be some false-positives than to have false-negatives when screening patients for depression. Janssen et al. (2016) reach the same conclusion in their study into the PHQ-9's psychometric qualities as a depression screening tool for people with type 2 diabetes. However, Fisher et al. (2015) found that PHQ-8 shows a high false-positive rate in type 1 diabetes patients.

Healthcare providers, including nurses, face the task of assessing the potential harm associated with false positives and false negatives while recognizing depression in diabetes patients. The choice of a cutoff value is influenced by factors such as the patient population, clinical setting, and available resources. Consequently, healthcare professionals must carefully weigh these considerations when deciding on the most appropriate cutoff value for their specific context. Further research is needed to validate the optimal cut-off values for each depression assessment tool for diabetes patients.

5.4.2 Depression screening protocols for identifying depression in diabetes patients

This descriptive literature review identified depression screening programs and protocols as tools for recognizing depression in diabetes patients. These programs are designed to systematize the process of identifying individuals with depressive symptoms, allowing for timely intervention and appropriate follow-up care. However, sometimes these screening protocols are not obeyed (Bajrachrya et al. 2016 and Willborn et al. 2016).

Palmer et al. (2015) assessed the efficiency of a depression screening and therapy program for individuals with diabetes mellitus in primary care settings in the United States. Their findings indicated a high level of fidelity for compliance with the staff's program for depression assessment and treatment. This underscores the feasibility of implementing structured screening protocols in primary care settings and the commitment of healthcare professionals to the successful execution of these programs.

Furthermore, Palmer et al. (2015) study showed how well the cooperative depression model works in primary care settings for identifying, treating, and keeping track of depression. This collaborative approach involving various healthcare providers and professionals contributes to a comprehensive understanding of the patient's mental health needs and facilitates tailored interventions.

In a similar manner, Bajracharya et al. (2016) implemented a depression screening protocol in the primary care setting, evaluating its effectiveness in managing depression in adult patients, including those with diabetes. The results of their study highlighted the significance of screening for depression in the primary care environment,

emphasizing that it forms an essential component of depression management for adult patients.

By integrating depression screening into primary care, healthcare professionals can identify patients with depression early on and initiate appropriate treatment and support. In addition to meeting the patients' psychological needs, this also enhances general health and quality of life. Nurses play an important role in recognizing depression in diabetes patients due to their close contact with patients.

However, this descriptive review revealed that the existing literature in this domain is sparse in studies specifically addressing depression screening protocols and programs for diabetes patients. Although the identified studies, such as those by Palmer et al. (2015) and Bajracharya et al. (2016), have provided valuable insights into the benefits of these programs, their numbers are limited. This limitation highlights the need for more research to establish best practices and guidelines for the integration of depression screening protocols in diabetes care settings. These best practices should encompass the selection of appropriate screening tools, the frequency and timing of screenings, and the methods for ensuring compliance and follow-up care, among other considerations.

Implementing depression screening programs and protocols may face challenges related to cost-effectiveness and resource constraints. For instance, Bajracharya et al. (2016) found that one of the most common reasons for insufficient depression screening in their study setting was lack of time. Introducing new programs in health care settings requires careful consideration of the costs involved, both in terms of screening tools and personnel time. Moreover, resource constraints, including workforce shortages and financial limitations, may impede the successful execution of depression screening programs.

Achieving an appropriate balance between the resources needed for implementation and the possible advantage of recognizing depression is crucial. The studies included in this descriptive review did not analyze the feasibility of the depression screening protocols. Future research that explores the cost-effectiveness of these programs is pivotal.

In summary, while depression screening protocols and programs show promise in recognizing depression in diabetes patients, the limited number of studies addressing these initiatives in the identified literature highlights the need for additional research. This research should aim to establish best practices, address resource constraints, and assess the cost-effectiveness of implementing depression screening programs in diverse healthcare settings.

5.4.3 Challenges in recognizing depression in diabetes patients

This chapter delves into the intricacies of depression screening in patients with diabetes, highlighting the challenges associated with differentiating between depression and diabetes distress.

Depression and diabetes often coexist, presenting a complex challenge for healthcare professionals (For example Egede and Ellis 2010: 304; Egede and Zheng 2003: 104; Pouwer, Nefs and Nouwen 2013: 529 and Lin et al. 2010: 264). The symptoms of these two conditions can overlap, making it difficult to distinguish between them accurately. For example, the symptoms of depression, including changes in appetite, sleep disturbances, fatigue, and concentration problems, often overlap with the symptoms of diabetes. This overlapping symptomatology complicates the accurate recognition of depression in diabetes patients. Therefore, one of the central challenges in depression screening for diabetes patients, as identified in this descriptive review, is the distinction between true depression and distress brought on by diabetes.

Diabetes distress is the term used to describe the mental and emotional impact that managing diabetes takes, encompassing feelings of frustration, fear, and burnout related to the disease's daily management (Fisher et al. 2008 and Fisher et al. 2012). Numerous aspects of diabetes distress are like those of major depressive disorder (Katon et al. 2010; Fisher et al. 2012). This emotional distress can be misconstrued as depression, leading to false-positive results when using standard depression assessment tools. Some authors like for instance Darwish et al. (2018); Fisher et al. (2012) and Wardian et al. (2019) argue that many assessment tools for depression may cause false positives because they identify emotional aspects related to diabetes distress rather than capturing aspects related solely to depression.

PHQ-9, for example, includes items related to sleep, appetite, and energy levels, which are symptoms that can be influenced by the management and daily challenges of diabetes. For instance, Twist et al. (2013) found that false positives, defined by PHQ-9 cut-off, scored higher primarily in terms of fatigue, sleep, and psychomotor agitation, and they argued that the overidentification of depression by PHQ-9 in DM patients may be caused by aspects related to having a long-term illness like DM. As a result, diabetes patients may be at a higher risk of receiving false-positive results when assessed for depression using these tools.

6 Discussion

This descriptive literature review yielded important insights into the recognition of depression diabetes patients. Two main themes emerged from the analysis: depression assessment tools and depression screening protocols.

The recognition of depression in diabetes patients is facilitated by the availability of validated depression assessment tools, with the PHQ-9 and its variations being among the most widely utilized according to this descriptive literature review. There is evidence that the assessment tools that emerged from the analysis can be used to recognize depression in diabetes patients.

In particular, the extensive validation of the PHQ-9 assessment tool across various countries underscores its significance in the context of diabetes care. Its cross-cultural applicability and reliability make it a versatile tool to recognize depression for nurses working with diabetic patients. The validation of the PHQ-9 in diverse cultural and healthcare contexts enhances its utility and ensures that it continues to be an asset in identifying and addressing depression in diabetes patients.

Nurses play a crucial role in caring for diabetes patients and providing patient education, making it essential for them to be proficient in using these assessment tools to recognize depression. Given their frontline position in patient care, nurses are ideally positioned to implement these screening tools in routine assessments. Regular training and continuing education in the use of these tools could enhance their proficiency, ensuring early detection and intervention for depression among diabetes patients. By integrating depression screening into their standard care protocols, nurses can significantly

contribute to improving patient outcomes considering depression care in diabetic patients. In particular, understanding of the PHQ-9, its implementation and the interpretation of its results would be beneficial for nurses caring for diabetes patients.

Nevertheless, the challenge of determining the optimal cutoff values for the assessment tools remains a critical issue, as it necessitates a balance between false positives and false negatives. Nurses must consider the unique characteristics of their patient population, time constraints and clinical setting when making this decision to optimize depression recognition while minimizing potential harm. Ultimately, this challenge underscores the importance of ongoing research, further validation of the assessment tools and the development of standardized guidelines for depression screening in diabetes patients.

In addition, depression screening protocols can be useful for early detection and management of depression in diabetes patients, as highlighted by this descriptive review. Studies like Palmer et al. (2015) and Bajracharya et al. (2016) demonstrate the effectiveness of these protocols in primary care, particularly when implemented with high compliance and collaborative care models. However, our descriptive review also reveals challenges such as inconsistent adherence due to time constraints and resource limitations. Despite their potential benefits, there is a lack of extensive research specifically focused on depression screening in diabetes patients, indicating a need for further studies to establish best practices, ensure protocol adherence, and evaluate cost-effectiveness. Nevertheless, it is pivotal that nurses understand the importance of the adherence to these protocols, if they are implemented in their placement, in their day-to-day work.

7 Ethics and Validity

Most ethical considerations regarding this thesis are about the openness and integrity of the research. We aspire to mitigate them by following the guidelines of The Finnish Advisory Board on Research Integrity guidelines for research (2019). This means, for instance, that we follow the principles endorsed by the academic community in choosing our methodology and conducting our research.

Our research process, search terms and search strategy are described in an open manner so that other research can replicate the research process. All databases and

source literature used are considered reliable and open to access for other researchers. Furthermore, we will give credit to other research and authors with appropriate references, when needed.

This thesis is a part of nursing degree program. This thesis is not motivated by financial interests and no conflicts of interests considering this thesis were identified.

For nurse assessment tools aimed at recognizing depression in diabetic patients, validity ensures the assessment tool accurately identifies true cases of depression. A risk in literature review lies in potential publication bias, where studies with positive results get published more frequently than those with negative or neutral results. (Song, Parekh and Hooper 2010: 9-11.) Thus, while reviewing the literature, it is essential to consider a comprehensive range of studies, not just those that have been prominently cited.

Another potential pitfall is the cultural validity of the assessment tools. Since cultural factors can influence the presentation of depression, assessment tools should be validated across diverse populations to ensure cultural relevance (Bhui, Bhugra and Golberg 2007: 248-254). Due to the lack of translation services accessible to us, this thesis is limited to publications in English, which may introduce geographical and therefore cultural biases to the data.

8 Strengths and limitations

The strengths of this descriptive literature review lie in its ability to provide a comprehensive overview of existing research on recognizing depression in diabetes patients. The 18 articles analyzed in this study originate from diverse countries, offering an opportunity to gather and compare assessment tools from various cultural contexts. Additionally, the wide geographical representation in the sample provides valuable insights into the cross-cultural validation of these assessment tools.

One significant drawback of this descriptive review is its lack of depth and critical analysis compared to more rigorous reviews, such as systematic reviews or meta-analyses. This limitation can reduce the ability to draw definitive conclusions about the effectiveness of depression assessment tools or screening protocols. Additionally, the selection of studies was based on the availability of literature and the researchers' judgment, which introduces the potential for bias. This process could result in an incomplete or

skewed representation of the topic, especially when excluding non-English publications, which may have omitted important research conducted in other languages.

Another limitation is the inherent subjectivity involved in the use of inductive content analysis. While this method allows themes to emerge naturally from the data, the coding process can introduce bias, as it relies on the interpretation of the researchers. Moreover, although we describe our search strategy and methodology, descriptive literature reviews do not follow a strict methodological protocol, which can affect the reproducibility and reliability of our findings.

Finally, the small sample size of 18 studies, though comprehensive in scope, limits the generalizability of the findings to broader diabetes patient populations. This relatively limited dataset constrains the ability to fully explore the diversity of patient experiences and assessment tools in different cultural or healthcare contexts.

9 Conclusion

This descriptive literature review provides insights into depression recognition among diabetes patients. The analysis identified assessment tools and screening protocols as key methods for recognizing depression in this population. The review found that the Patient Health Questionnaire-9 (PHQ-9) and its variations are widely used and validated tools for identifying depression in diabetes patients. The PHQ-9's cross-cultural applicability and reliability make it a valuable resource for nurses.

The review also highlighted the effectiveness of structured depression screening protocols in primary care. These protocols may facilitate early detection and appropriate follow-up care for depression in diabetes patients. However, challenges such as inconsistent adherence and resource constraints, including time limitations, remain significant barriers.

For nursing practice, these findings underscore the importance of proficiency in using validated assessment tools like the PHQ-9. Nurses must integrate depression screening into routine diabetes care, advocating for and implementing structured protocols to address both the psychological and physical health needs of their patients. Continuous training and involvement in research are essential to refine these practices like the optimal cut-off points for the assessment tools.

Furthermore, the review highlights the need for continued research and better implementation strategies. Nurses play a key role in this effort by providing valuable feedback on the effectiveness of depression screening tools. Their involvement is essential for refining these practices and improving patient outcomes and care quality.

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Appendices

Appendix 1

Table 5. Database search results

Data base	Search terms	Total results	Excluded based on title	Excluded based on abstract	Excluded based of full text	Duplicates	Language other than English	Full text not available	Included for study
CINAHL (Ebsco)	“Assessment tool*” **AND** diabete* **AND** depression	N=286	270	8	3	0	2	2	1
PubMed	“Assessment tool*” **AND** diabete* **AND** depression	N=68	53	4	4	0	0	7	0
CINAHL (EBSCO)	diabetic OR "diabetes type 1" OR "diabetes type 2" **OR** T2DM **OR** T1DM Screening **OR** identify* **OR** diagnos* **OR** distinguish* **OR** detect* "Depressive symptoms" **OR** "Depressive disorder" **OR** MDD	N=490	401	36	25	1	11	6	10

Appendix 1

Pub Med	(Diabetic **OR** "Diabetes type 1" **OR** "Diabetes type 2" **OR** T2DM **OR** T1DM) (Screening **OR** identify* **OR** diagnos* **OR** distinguish* **OR** detect*) ("Depressive symptoms" **OR** "Depressive disorder" **OR** MDD)	N=1730	1627	67	3	12	0	14	7

Appendix 2

Table 6. Article Summar

Articles	Aim	Methods	Participants	Main outcomes	Limitations
1. Halliday et al. 2017 Australia. Diabetes Research and Clinical Practice 132 (2017) 27–35	To study the suitability of WHO-5 for identifying depression in Australian adults with diabetes.	Quantitative study.	Total of 3249 Australians with type 1 diabetes or type 2 diabetes.	The WHO-5 has satisfactory psychometric properties and utility as a suitable screening instrument for depression among English-speaking adults with diabetes.	The primary limitation of this study is the inability to compare the WHO-5 against a clinical diagnostic interview for depression due to the survey methodology.
2. Willborn et al. 2016. USA. Journal of Psychosocial nursing • Vol. 54, no. 1, 2016.	Assessing the frequency and distribution of the 9-Item Patient Health Questionnaire (PHQ-9) among individuals with type 2 diabetes with and without depression.	Quantitative study. A retrospective, case-control study using electronic medical record (EMR) data from two local primary care practices.	The total sample included 1,817 patients with diabetes from two primary care institutions in the US, of whom 580 had depression.	PHQ-9 was found to be underused in the study setting. Under-recognition of undiagnosed depression among patients in the primary care setting may be partially addressed with broadened use of validated depression screening tools.	The study is a retrospective study, and it is not possible to determine directionality or causality of the variables studied. The medical records method had missing or incomplete date, which may bias the results.
3. Janssen et al. 2016. Netherlands. Journal of the American Geriatrics Society	Assessing the psychometric properties and identifying the best cutoff value of the Patient Health Questionnaire-9 (PHQ-9) for depression screening in individuals with type 2 diabetes mellitus (T2DM).	Quantitative study. Observational population-based cohort study.	Total sample 2997.	The PHQ-9 performs well as a depression screening tool in individuals with and without T2DM. PHQ-9 cutoff of 5 was found to distinguish far	The study population was mainly Caucasian, which limits extrapolation to non-Caucasian populations. The recruitment strategy of the Maastricht study may have biased the sample, leading to

• Vol. 64, no. 11, 2016.				better between individuals with and without depression as diagnosed using the MINI structured inter- view than the traditional cut-off 10.	more participants with more severe depression or DM to participate in the study.
4. Bajracharya et al. 2016.USA. The Journal for Nurse Practitioners • Vol. 12, no. 10, 2016.	To implement a Depression Screening Protocol and Tools in Patients With Diabetes in the Primary Care Setting and to analyze its effectiveness.	Quantitative study.	Participants included a total of 378 adults patients visited during the study period.	Screening for depression followed by effective treat- ment in the primary care setting was found to be an important part in depression management of adult patients.	The project implementation showed improvement in depression screening practice, but it did not examine outcomes of care for patients with diabetes or other patients with depression due to the short project implementation period. This study was also not randomized and controlled study.
5. Palmer et al. 2015. USA. Journal of the American Association of Nurse Practitioners. • Vol. 27, no.3, 2015.	To evaluate a depression screening and treatment program in primary care for patients with diabetes mellitus.	Qualitative and quantitative. This study utilized program evaluation methodology.	Participants included 1312 outpatient IMC visits in adult patients with diabetes between March 2011 and September 2011.	The results showed high fidelity for compliance with the depression screening and treatment program by the staff. The collaborative depression model was successful in detecting, treating, and following depression in the primary care setting.	Does not compare the results of PHQ-9 or PHQ-2 to the clinical interview or diagnosis of depression. Sample only one IMC clinic. Diagnostic and methodological problems of PHQ-9/2 as an indicator of depression.

6. Hyphantis et al. 2015. Journal of Affective Disorders. Greece. **• Vol. 176, no.155-63, 2015.**	Assessing the prevalence of MDD and determine the psychometric properties of the PHQ-9 in diagnosing MDD in patients with long-term medical conditions attending an AED.	Quantitative study.	349 (80.4%) patients agreed to participate (194 with DM only).	The study found that PHQ-9 can detect depression in attendance of AED. The optimal PHQ-9 cut-of-point was less than 10 in all subgroups studied, ranging from as low as 6 for "diabetes only."	The heterogeneity of the sample, since it consists of multiple rather than a single disease group. The sample size was rather small, only 194 DM patients. Sample from only one AED in Greece.
7. Twist et al. 2013. Psychosomatic Medicine. UK. **• Vol. 75, no.791-797, 2013.**	Test the validity of the Patient Health Questionnaire-9 (PHQ-9) in adults with newly diagnosed Type 2 diabetes mellitus (T2DM) and compare the distribution of PHQ-9 items in those with and without Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) depression.	Quantitative study.	1500 participants from 96 primary care centers in the UK aged 18-75 years who had received a diagnosis of T2DM with a maximum duration of 6 months. Of the 1500 participants 368 completed the scan interview.	Questionnaire- based diagnosis of depression gives a prevalence about twice that achieved using a criterion-standard diagnostic interview. The PHQ-9 offers a range of cutoffs with a score of 12 or higher representing optimum validity in patients with new- onset T2DM. The findings support the suggestions that a higher cutoff had greater validity in patients with diabetes.	Many patients will have had asymptomatic T2DM for several years before the diagnosis is made. The people conducting the interviews were not blind to the PHQ-9 results, which may have affected their decisions.
8. Rauwerda et al. 2018. Diabetic Medicine. Netherlands•	Investigates the acceptability of two questionnaires, the five items WHO Well-being Index (WHO-5) and the Beck	Quantitative study.	699 Participants with diabetes of whom 95 completed the WHO-5, 254 completed the BDI-II and 350 completed both the	Results indicate that content and brevity only have a small ef-	The sample size was small, especially for the WHO-5-only screening group.

Vol. 35, no.1678-1685, 2018.	Depression Inventory II (BDI-II) by comparing three screening groups: (1) WHO- 5, (2) BDI-II and (3) WHO-5 and BDI-II.		WHO-5 and the BDI-II questionnaires.	fect on the acceptability of a screening questionnaire. Either or both questionnaires can be used to screen for depressive symptoms in people with diabetes in clinical practice.	
9. Tay; Chua and Khoo. 2023. **Journal of Diabetes Investigation.** **Singapore.** **• Vol. 14, no.9, 1128-1135; 2023.**	Evaluates the validity of the short-form five-item Problem Areas in Diabetes (PAID-5) questionnaire as a screening tool for depression, comparing it with the Beck Depression Inventory-II (BDI-II) and nine-item Patient Health Questionnaire (PHQ-9).	Quantitative study.	A total of 208 English-speaking adults with type 2 diabetes recruited from outpatient clinics.	All three screening tools were found highly reliable. Depressive symptoms are prevalent in people with type 2 diabetes, with the degree of distress significantly related to the severity of depressive symptoms. PAID-5 is a valid and reliable screening tool, and a score ≥9 could prompt further confirmation for depression.	They did not compare the PAID-5 with the standardized diagnostic interview for depression. The population was relatively small and, as only English-speaking individuals were enrolled, this might have introduced selection bias.
10) A.Kokoszka et al. Europe 2020 **Poland**	Screening tools that can help improve the detection of depression in patients with diabetes	Quantitative Study.	Patients with type 2 diabetes mellitus Female-50 Male-51 The participants mean age was 63.17 (SD=10.74)	With English cut-off points, the tools had varying sensitivity and specificity. The best cut-off points, all measures had good or very good sensitivity The HADS and BS-RSDA appear to be	This study has limitations, including non-randomized patient selection, the presence of comorbidity between depression and anxiety disorders, and a lack of control in administering the scales.

Primary Care Diabetes Vol 14. (2020) 663-671			n=101	the best screening tools considering their length.	
11) Y. Zhang et al. 2013 **Journal of Affective Disorders** **China** **Vol. 151 (2013)**	To validate the PHQ-9 as a depression screening tool for Chinese with type 2 diabetic patients	Quantitative study	Hong Kong Chinese outpatients completed the PHQ-9 40 patients were retested via telephone survey. 99 randomly selected patients were interviewed by psychiatrists using Mini international Neuropsychiatric	The main outcome of using the PHQ-9 in Chinese with type 2 diabetic patients is to screen for undiagnosed depression, which is associated with suboptimal glycemic control, hypoglycemia, and somatization.	The limitations for this study include a small sample size and the use of a cross-sectional design, which restricts causal inference. The sample used may not fully represent the entire Chinese diabetes population, the study was specific to the Hong Kong Chinese population, and the cross-sectional nature of the study limits the ability to establish cause and effect relationships.
12) L. Fisher et. al. Diabetes UK 2015 **Educational and Psychological Issues** **USA**	To determine the prevalence of depression and diabetes distress in adults with Type 1 diabetes.	Quantitative study. Questionnaire.	Individuals with Type 1 diabetes aged over 19 years. Participants were contracted via letters from clinic staff and were screened by telephone. n=368	The main finding out of this study was a low rate of depression and major depressive disorder in adults with type 1 diabetes. Suggesting that emotional distress associated with managing the disease may account for what is often thought of as depression.	Limitations including its cross-sectional design, focus on current depression rather than past or lifetime depression, lack of control for psychoactive medication use, potential bias from telephone interviews, limitations in reliability and validity of interview measures, and the subjective nature of self-reported experiences in assessing depression.
13) L.F. Hsu et al. **International Journal of**	To examine the psychometric properties of the CUDOS-Chinese.	Quantitative study. Methodological Research.	Patients with type 2 diabetics with the mean age of 62.6 years were enrolled. 212, completed the study.	The findings of this study were that the CUDOS-Chinese screening tool showed satisfactory validity	The study's finding may not be applicable to the entire population with chronic diseases because the participants were recruited from only two hospitals

Nursing Studies Vol .51 (2014) 1595-1604 **Taiwan**		Questionnaire.	n=214	and reliability for detecting depression in type 2 diabetes patients in Taiwan.	and had specific inclusion and exclusion criteria. Potential bias due to the majority of participants completing the CUDOS-Chinese before the BDIII, introducing an order effect in the testing results.
14) Cichoń. E, et al. Elsevier B.V. **Diabetes Research and Clinical Practice Vol. 159 (2020)** **Poland**	The aim of this study was to validate and analyze the factorial structure of the WHO 5-item Well-being index (WHO-5) among outpatients with type 2 diabetes.	Questionnaire. Qualitative study.	Participants were randomly chosen among polish diabetes outpatients. There was a total of 216 participants who completed the Polish version of the WHO-5, Problem Areas in Diabetes Scale, and Patient Health Questionnaire. n=216	This research found that the psychometric of the WHO-5 as a screening instrument for likely depression in Polish adults with type 2 diabetes are very good. This suggests that the WHO-5 is a suitable tool for assessing depression.	The Study was limited to data collected only in Poland. The study was conducted in specialist clinics, so the findings may not represent the wider diabetes population and could overestimate the severity of depressive symptoms. Information on non-pharmacological treatments was not recorded, which may affect the interpretation of the results.
15) Carter J. et al. Journal of Psychosomatic Research Vol.90 (2016) 91-97 **Canada**	This study aimed to validate the 3-factor structure of the 14-item CES-D scale among patients with type 2 diabetes mellitus.	Quantitative study.	Consecutive patients with T2DM are entering rehabilitation programs. n=305	The major findings of this research are that the 14-item CES-D scale, which measures depressive symptoms, retained construct validity in adults with type 2 diabetes mellitus (T2DM). The study also found that depressive symptoms were associated with younger age, female gender.	The study sample was taken from a specific rehabilitation program at a single location. This means that the findings may not apply to or represent other populations or settings.

16) Carreira. M et. al **Environ. Res. Public health. 2021 Vol. 18 Spain**	The aim of this study was to develop a specific depressive symptoms assessment instrument for patients with type 1 diabetes (T1D). The goal was to improve the detection of depression in this population.	Quantitative study.	A total of 207 people with T1D participated in this study. n=207	This study was that the DID-1 scale, specifically developed for assessing depressive symptoms in patients with type 1 diabetes, was found reliable, valid, and useful. This scale helped eliminate the bias that may be present in other nonspecific diabetes scales when assessing depression in this population.	The study did not include a measure of distress, despite the correlation typically observed between depression and distress. This was due to the unavailability of a Spanish translation of the distress measure at the time of the study. Type 1 diabetes (T1D) can influence the evaluation of depression, even when using standardized clinical interviews administered by trained professionals. Therefore, there is a need for depression in individuals with T1D.
17) Cichoń et al. 2020 **Poland**	This study assessed the Polish version of the PHQ-9 ability to detect major depression.	Quantitative study.	A total of 216 participants were chosen at random from a diabetes outpatient facility, while 99 participants were selected from patients admitted to a medical center and psychiatric hospital. N=216	The Polish version of the PHQ-9 is a reliable and valid screening tool for depression in people with and without type 2 diabetes.	Most participants were from urban areas, limiting generalizability to rural populations. Patients in specialist clinics may differ in depressive symptoms compared to the wider diabetes population. Had a small group size and non-random participant selection. Despite the small group size, results align with other studies, confirming strong psychometric properties of the PHQ-9 and important clinical implications.

18) **Davis et al.** **PLOS one** **2018** **Australia**	This study aims to develop a validated combined depression- anxiety metric. This study aims to create a comprehensive metric that can be applied to individuals, as opposed to population-levels analysis.	Quantitative study.	Participants were 1,337 with type 2 diabetes from the Fremantle Diabetes Study Phase II.	The Diabetes Anxiety Depression Scale (DADS) demonstrated strong psychometric validity in identifying mixed depression-anxiety in individuals with type 2 diabetes.	The study did not assess diabetes distress, which overlaps with symptoms of anxious depression. The study did not have a separate validation dataset or assess test-retest reliability for the DADS. DADS cut-off score of 18 correctly identified participants with major anxious depression and was associated with coronary heart disease and cardiovascular mortality. DADS score greater than seven identified most participants with minor depression, but some with subclinical anxiety were misclassified.