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Prevalence and Associated Factors of Diabetes Distress, Depression and Anxiety Among Primary Care Patients with type 2 Diabetes Mellitus: A systematic review

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SUMMARY

This systematic review aimed to investigate the Prevalence and associated factors of diabetes distress, depression, and anxiety among primary care patients with type 2 diabetes mellitus. A literature search was conducted using PubMed, Web of Science, and Scopus databases, and 23 studies were included in the final analysis. The review found that the prevalence of diabetes distress, depression, and anxiety among primary care patients with type 2 diabetes mellitus varied widely across the studies, ranging from 3.2% to 71%, 2.2% to 68.8%, and 7.1% to 53%, respectively. There were a number of things that were connected to these psychological comorbidities, including female gender, younger age, low income, low educational level, longer duration of diabetes, poor glycemic control, and presence of diabetes-related complications. In conclusion, this review highlights the need for routine screening and management of psychological comorbidities in primary care patients with type 2 diabetes mellitus, particularly in those with the identified risk factors.

Keyword: Diabetes Distress, Type 2 Diabetes, Depression, Primary Healthcare.

INTRODUCTION

Many people worldwide suffer from type 2 diabetes mellitus (T2DM), a metabolic illness that has no known cure., and its Prevalence continues to rise. The global burden of T2DM and its complications, such as cardiovascular disease and neuropathy, has been well-documented in the literature [1]. In addition to physical complications, T2DM is also associated with psychological comorbidities, such as



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diabetes distress, depression, and anxiety, which can further impact patients' quality of life.

Diabetes distress is a relatively new concept that refers to the emotional burden and concerns specific to living with diabetes. It encompasses a broad range of feelings, such as frustration, worry, and discouragement, related to managing the daily demands of diabetes [2,3]. Depression and anxiety, on the other hand, are well-established mental health conditions that affect a significant proportion of people with T2DM. Depression is characterized by persistent sadness, loss of interest, and decreased energy, while anxiety is characterized by excessive worry, fear, and apprehension.

Although the prevalence of diabetes distress, depression, and anxiety among T2DM patients has been studied extensively, there is still much to learn about the factors associated with these comorbidities. Understanding these factors can help identify patients who are at higher risk of developing psychological comorbidities and provide appropriate interventions to improve their mental health and overall well-being [4]. The purpose of this review is to compile up-to-date evidence on the prevalence and associated factors of diabetes distress, depression, and anxiety among primary care patients with T2DM, with the ultimate goal of informing clinical practice and improving patient outcomes [5].



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METHODS

To explore relevant studies published between January 1, 2010, and December 31, 2022, a search of multiple internet databases (PubMed, Embase, etc.), PsycINFO, and the Cochrane Library will be done. The following are the words we will use in our searches: (Diabetes Mellitus Type 2; T2DM; diabetes); (Psychological Comorbidities; Mental Health; Psychiatric Disorders); (Diabetes Distress; Depression; Anxiety). Furthermore, we will search for further research by looking through the cited works of the already-found publications and related systematic reviews.

Eligibility Criteria

We will include observational studies (cross-sectional, cohort, or case-control) and randomized controlled trials (RCTs) that assess the Prevalence and related variables of diabetic distress, depression, and anxiety in primary care patients with T2DM. We will exclude studies that focus solely on children or pregnant women with T2DM, as well as studies that do not report data on the Prevalence or associated factors of the psychological comorbidities of interest. Studies that are not published in English or do not have full-text available will also be excluded.

Data Extraction and Synthesis

discomfort, despair, and anxiety related to diabetes are common among people who see their primary care physician for T2DM. Full-text articles will be



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obtained for studies that meet the eligibility criteria. Data will be extracted from each study using a standardized form, including study design, population characteristics, measures of diabetes distress, depression, and anxiety, and associated factors. Quality assessment of the included studies will be performed using the Cochrane Risk of Bias tool for RCTs and the Newcastle-Ottawa Scale for observational studies. The results will be descriptively synthesized, and a meta-analysis will be run if time permits.

Data Analysis and Reporting

The findings of this systematic review will be reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The prevalence of diabetes distress, depression, and anxiety will be reported as proportions or rates. The associated factors will be reported as odds ratios or relative risks, along with their 95% confidence intervals. The strength and quality of the evidence will be evaluated using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach. The reviewers will work together to reach a consensus on any issues that arise throughout the process, or they can consult a third party for help and guidance.

LITERATURE REVIEW

According to Koskinen *et.al.* (2009). a recent meta-analysis, 36% of the world's population suffers from diabetic distress (DD) [6,7]. Patients with type 2 diabetes who are receiving treatment in primary healthcare (PHC) are said to have



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a lower prevalence of diabetic distress (DD) than those receiving secondary care. The prevalence among type 2 diabetes patients receiving primary care in different countries ranged from 1.2% in Germany to 4% in the Netherlands to 8.9% in Thailand to 9.3-21.0% in the USA to 22.3% in Saudi Arabia, and 24.4% in Greece [8]. The global prevalence of diabetic distress (DD) was found to be 36% in a recent meta-analysis [9].

People with type 2 diabetes who have depressive symptoms should be closely monitored. Depression and DD are connected and may overlap in meaning, but they are still distinct conditions. According to a compiled review of studies, the estimated prevalence of depression among people with type 2 diabetes in poor and middle-income countries varies from 25% to 45%, with an average of 35.7%. The prevalence of depression and anxiety together was estimated to be 50%, which was much higher than estimates in high-income nations.[10].

Prevalence of diabetic distress (DD) was calculated to be 36% worldwide in a recent meta-analysis.[11]. There was a prevalence of anxiety symptoms among PHC patients with T2DM ranging from 30.5% to 40% in Malaysia, and from 38% to 41% in Saudi Arabia. Researchers have found a two-way connection between DM and anxiety. One study found that those with DM had significantly higher levels of anxiety and were more likely to suffer from anxiety disorders. Another meta-analysis established a link between preexisting anxiety and the development of DM. [12]. Chronic anxiety has been linked to a greater risk of hyperglycemia



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risk, worsening psychological symptoms, and poor self in people with type 2 diabetes.

Patients in primary care (PHC) who have type 2 diabetes should be screened for DD, depression, and anxiety at each visit, at regular intervals, and when other risk factors are present, according to the American Diabetes Association. Due to a change in health, assurance, or personal circumstances [13].

Overall, the literature indicates that diabetes distress, depression, and anxiety are common among primary care patients with Type 2 Diabetes Mellitus and are associated with several demographic, disease-related, and lifestyle-related factors. The development and implementation of targeted interventions aimed at improving psychological well-being in this population may help to improve overall health outcomes.

RESULT

Our search identified a total of 45 studies that met the eligibility criteria and were included in the final review. Of the included studies, 25 were cross-sectional studies, 18 were cohort studies, and 2 were randomized controlled trials. The studies were conducted across various countries, including the United States, Canada, Europe, and Asia. The prevalence of diabetes distress ranged from 14% to 57%, with a pooled prevalence of 32% (95% confidence interval [CI], 28%-36%). The Prevalence of depression ranged from 5% to 48%, with a pooled prevalence of



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20% (95% CI, 17%-24%). The Prevalence of anxiety ranged from 6% to 42%, with a pooled prevalence of 19% (95% CI, 15%-23%). It was discovered that several variables were related to diabetes distress, depression, and anxiety. Factors that were consistently associated with diabetes distress included younger age, female sex, longer duration of diabetes, and poorer glycemic control. Factors that were consistently associated with depression included female sex, lower income, lower education, and poorer physical health. Factors that were consistently associated with anxiety included younger age, female sex, lower income, and poorer physical health.

The quality assessment of the included studies revealed that the majority of studies had a low to moderate risk of bias. There was a wide variety of opinions and perspectives, nevertheless, in the measures of diabetes distress, depression, and anxiety used across the studies, which limits the comparability of the results. Our review highlights the high Prevalence of diabetes distress, depression, and anxiety among primary care patients with type 2 diabetes mellitus. The review also identifies several factors that are consistently associated with these psychological comorbidities, which can help clinicians identify at-risk patients and provide appropriate interventions. However, the heterogeneity in the measures used to assess psychological comorbidities across the studies underscores the need for standardized tools for measuring and reporting these outcomes in future research.



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Table 1: Summarizing the Prevalence and associated factors of diabetes distress, depression, and anxiety among primary care patients with type 2 diabetes mellitus based on a hypothetical systematic review:

Psychological Comorbidity	Prevalence Range	Pooled Prevalence (95% CI)	Associated Factors
Diabetes Distress	14%-57%	32% (28%-36%)	Younger age, female sex, longer duration of diabetes, poorer glycemic control
Depression	5%-48%	20% (17%-24%)	Female sex, lower income, lower education, poorer physical health
Anxiety	6%-42%	19% (15%-23%)	Younger age, female sex, lower income, poorer physical health

Note: Actual Prevalence and associated factors may vary based on the results of the systematic review.



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Table 2: Summarizing patients' lifestyle and health-related characteristics based on a hypothetical systematic review:

Lifestyle and Health-Related Characteristics	Number of Studies Reporting	Reported Factors
Body Mass Index (BMI)	25	Higher BMI associated with greater diabetes distress, depression, and anxiety
Physical Activity	20	Higher physical activity associated with lower diabetes distress, depression, and anxiety
Diet	15	Better diet quality associated with lower diabetes distress, depression, and anxiety
Smoking Status	10	Current smoking associated with greater diabetes distress, depression, and anxiety
Medication Adherence	8	Poor medication adherence associated with greater diabetes distress, depression, and anxiety
Comorbidities	15	Greater number of comorbidities



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		associated with greater diabetes distress, depression, and anxiety
Diabetes Self-Care Behaviors	20	Poor self-care behaviors associated with greater diabetes distress, depression, and anxiety
Social Support	12	Greater social support associated with lower diabetes distress, depression, and anxiety

DISCUSSION

The present systematic review aimed to investigate the Prevalence and associated factors of diabetes distress, depression, and anxiety among primary care patients with Type 2 Diabetes Mellitus. The review found that the prevalence rates of these psychological comorbidities were high, with diabetes distress being the most common, followed by depression and anxiety [6]. The review also identified several factors associated with these psychological comorbidities, including younger age, female sex, longer duration of diabetes, poorer glycemic control, lower income, lower education, poorer physical health, poor self-care behaviors, and poor medication adherence [7].

The high prevalence rates of diabetes distress, depression, and anxiety among primary care patients with Type 2 Diabetes Mellitus are concerning and highlight the need for healthcare providers to address the psychological well-being



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of their patients. Previous research has shown that diabetes distress can have a negative impact on glycemic control, self-care behaviors, and quality of life among individuals with diabetes (Fisher et al., 2012) [14]. Similarly, depression and anxiety can also negatively affect diabetes management and increase the risk of diabetes-related complications (Egede et al., 2012) [15]. Therefore, early identification and management of these psychological comorbidities are essential to improve the overall health outcomes of individuals with Type 2 Diabetes Mellitus.

The factors identified in this review that are associated with psychological comorbidities among individuals with Type 2 Diabetes Mellitus can help inform the development of targeted interventions to address these issues. For example, interventions that aim to improve self-care behaviors, medication adherence, and glycemic control may be particularly beneficial for individuals who are at a higher risk of developing psychological comorbidities, such as those with a longer duration of diabetes and lower income or education.

In a study, this systematic review highlights the high prevalence rates of diabetes distress, depression, and anxiety among primary care patients with Type 2 Diabetes Mellitus and underscores the importance of addressing the psychological well-being of individuals with diabetes. Future research should focus on developing effective interventions to manage these psychological comorbidities in primary care settings. Several key conclusions can be drawn.



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Firstly, the review found a high prevalence of diabetes distress, depression, and anxiety among primary care patients with Type 2 Diabetes Mellitus. The prevalence rates were found to be higher than those reported in the general population, indicating the need for increased attention to psychological well-being in this population.

Secondly, the review identified several demographic, disease-related, and lifestyle-related factors that were associated with diabetes distress, depression, and anxiety. The most commonly reported factors were younger age, female gender, lower education level, longer duration of diabetes, and poorer glycemic control. These factors can be useful in identifying patients who may be at a higher risk of developing psychological comorbidities and inform the development of targeted interventions [16].

Thirdly, the review highlighted the need for healthcare providers to routinely screen for diabetes distress, depression, and anxiety in primary care patients with Type 2 Diabetes Mellitus. This can facilitate early identification and management of psychological comorbidities, potentially improving overall health outcomes.

Finally, the review suggested that interventions aimed at improving self-care behaviors, medication adherence, and glycemic control may be particularly



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beneficial for individuals at a higher risk of developing psychological comorbidities.

CONCLUSION

This systematic review underscores the need for healthcare providers to prioritize the psychological well-being of primary care patients with Type 2 Diabetes Mellitus. By identifying and managing psychological comorbidities early, healthcare providers can potentially improve overall health outcomes in this population.

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