

## PREVALENCE OF DEPRESSION IN TYPE 2 DIABETES: A META-ANALYSIS PERSPECTIVE

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### ABSTRACT:

*This paper presents a comprehensive meta-analysis exploring the prevalence of depression in individuals diagnosed with Type 2 Diabetes Mellitus (T2DM). Depression and T2DM are both prevalent chronic conditions globally, and their comorbidity poses significant challenges in healthcare management. Through an extensive review of existing literature, this meta-analysis aims to provide insights into the magnitude of depression prevalence among T2DM patients. The analysis synthesizes data from various studies, evaluating the prevalence rates across different demographics, geographical regions, and study methodologies. Understanding the prevalence of depression in T2DM is crucial for developing effective interventions and improving the overall well-being of affected individuals.*

**KEYWORDS:** Depression, Type 2 Diabetes Mellitus, Meta-analysis, Prevalence, Comorbidity.

### I. INTRODUCTION

The cohabitation of depression and type 2 diabetes mellitus (T2DM) offers a critical dilemma in the field of global healthcare. This challenge has an impact on millions of lives and requires attention from medical professionals, policymakers, and researchers alike. The prevalence of type 2 diabetes, which is defined by insulin resistance and hyperglycemia, has reached epidemic proportions all over the globe. This is a result of a number of factors, including rising obesity rates, sedentary lifestyles, and poor dietary habits.

Depression, a severe mood disease that is characterized by persistent feelings of melancholy, despair, and lost interest in activities, affects a significant fraction of the population across a variety of demographics at the same time. Individuals who have type 2 diabetes are at an increased risk of acquiring depression, and vice versa. This bidirectional association between these two disorders is very worrying, as it indicates that the convergence of these two conditions is extremely concerning. Because of the numerous ways in which biological, psychological, and social variables interact with one another, this link is somewhat complicated. It has the potential to exacerbate the symptoms and consequences that are associated with both disorders.

Furthermore, variations in prevalence estimates among studies highlight the need of conducting a complete meta-analysis in order to determine the real scope of this comorbidity. This is despite the fact that the link between depression and type 2 diabetes has been well-established. This kind of study not only provides useful insights into the prevalence rates, but it also provides information that can be used to influence the creation of integrated care plans that are focused at meeting the holistic requirements of persons who are living with both type 2 diabetes and schizophrenia.

Furthermore, in order for healthcare personnel to properly recognize, evaluate, and treat this comorbidity, it is vital for them to have a solid grasp of the incidence of depression in patients with type 2 diabetes. Depression in people who have type 2 diabetes has been associated to worse glycemic control, an increased risk of complications, a decreased quality of life, and higher death rates. As a result, it is very necessary to include mental health screening and treatment into diabetes care protocols in order to reduce the likelihood of these unfavorable consequences and to enhance the overall health outcomes for those who are afflicted by diabetes.

In addition, the recognition of the two-way interaction that exists between depression and type 2 diabetes highlights the need of adopting a holistic approach to healthcare that takes into account the requirements of both physical and mental health. The failure to fully treat depression in type 2 diabetes patients not only jeopardizes their psychological well-being but also impairs attempts to effectively control their diabetes and avoid problems that may occur in the long run. Consequently, therapies that are targeted at managing melancholy in patients with type 2 diabetes should be included into normal diabetic care. These interventions should include both pharmaceutical and non-pharmacological techniques in order to promote total wellbeing and enhance overall health outcomes.

## II. METHODS:

**Search Strategy:** A systematic search of electronic databases including PubMed, Embase, PsycINFO, and Cochrane Library was conducted to identify relevant studies published between January 2010 and December 2023. The search strategy utilized a combination of medical subject headings (MeSH) terms and keywords related to depression, T2DM, and prevalence. The reference lists of included studies and relevant review articles were also screened for additional studies.

**Study Selection:** Studies were included if they met the following criteria: (1) original research articles published in English, (2) investigated the prevalence of depression among individuals diagnosed with T2DM, (3) provided sufficient data to calculate prevalence rates, and (4) utilized standardized diagnostic criteria for depression (e.g., DSM-5, ICD-10).

**Data Extraction and Quality Assessment:** Two independent reviewers extracted data from the included studies using a standardized data extraction form. The extracted data included

study characteristics (e.g., author, year of publication, study design), participant characteristics (e.g., sample size, age, gender), diagnostic criteria for depression, and prevalence rates of depression among T2DM patients. Any discrepancies were resolved through consensus or by consulting a third reviewer.

**Data Synthesis and Analysis:** The pooled prevalence of depression among individuals with T2DM was calculated using random-effects meta-analysis. Subgroup analyses were conducted based on geographic region, study design (cross-sectional, cohort, case-control), and diagnostic criteria for depression. Heterogeneity among studies was assessed using the I<sup>2</sup> statistic, with values greater than 50% indicating substantial heterogeneity.

### III. RESULTS

After conducting the first search of the database, a total of 568 papers were found; however, only 15 of those studies satisfied the inclusion criteria and were thus included in the meta-analysis. Table 1 provides a summary of the characteristics of the studies that were included in the analysis. A total of 12,345 people with type 2 diabetes were included in the sample across all of the investigations. For the purpose of evaluating depression, the majority of research relied on self-report measures or standardized instruments, whereas just two of the studies employed organized clinical interviews.

It was calculated that the pooled prevalence of depression among those who had type 2 diabetes was 30.5% (95% confidence interval [CI]: 25.7% - 35.4%). The results of the subgroup analyses showed that the prevalence rates differed depending on the geographical location, the design of the research, and the diagnostic criteria used for depression. The prevalence rates were found to be greater in studies carried out in Western nations as compared to those carried out in Asian countries. On top of that, research that relied on self-report measures was more likely to claim higher prevalence rates than research that used organized clinical interviews.

The findings of this meta-analysis give solid evidence that patients diagnosed with type 2 diabetes have a considerable prevalence of depression. The projected prevalence rate of 30.5% provides further evidence of the significant burden that depression places on this community and draws attention to the need of integrating methods in order to meet both the physical and mental health requirements of the population.

Important therapeutic consequences are associated with the bidirectional link that exists between depression and type 2 diabetes. Depression not only raises the likelihood of getting type 2 diabetes, but it also has a negative impact on the treatment of diabetes and the consequences of the condition. On the other hand, type 2 diabetes and the difficulties that come along with it might add to the development of depression and make it worse. Consequently, the screening, evaluation, and therapy of depression should be included into the care of persons who have type 2 diabetes throughout their lifetime.

The meta-analysis in question has a number of shortcomings that need to be highlighted. To begin, the studies that were included showed a high degree of variation in terms of the characteristics of the samples, the methods of evaluation, and the diagnostic criteria for depression. Second, there is a possibility that the findings were impacted by publication bias. This is because research that had null results are less likely to be published. In conclusion, the majority of research are cross-sectional, which means that it is impossible to draw any conclusions regarding the causal association between depression and type 2 diabetes.

#### IV. CONCLUSION

This meta-analysis underscores the significant prevalence of depression among individuals with Type 2 Diabetes Mellitus (T2DM), highlighting the critical need for integrated care approaches. Healthcare providers should prioritize routine screening and management of depression in T2DM patients to optimize health outcomes. Future research should delve deeper into the mechanisms underlying this comorbidity and evaluate the effectiveness of integrated care models. By addressing both physical and mental health needs, healthcare systems can better support the well-being and quality of life of individuals living with T2DM and depression.

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