

High Prevalence of Erectile Dysfunction in Diabetic Men With Depressive Symptoms: A Meta-Analysis



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ABSTRACT

Background: Erectile dysfunction (ED) may be common among diabetic men with depressive symptoms (DS), but its prevalence is still debated.

Aim: To conduct a meta-analysis of the prevalence of ED in diabetic men with DS compared to those without DS, calculating the relative odds ratios (ORs) and 95% CIs.

Methods: PubMed, MEDLINE, Embase, and Web of Science were searched up to January 2018. All the studies assessing the risk of ED among diabetic men having DS were reviewed. 2 Authors independently assessed literature and extracted information eligibility. Any disagreement was resolved by a third reviewer. Newcastle-Ottawa quality assessment scale was used to evaluate study quality in meta-analyses. We calculated the ORs with 95% CIs using software Stata, Version 12.0; StataCorp, College Station, TX). Data were pooled using a fixed or random effects model according to heterogeneity. Sensitivity analyses were conducted to assess potential bias. This study was conducted according to the guidelines for Meta-Analyses and Systematic Reviews of Observational Studies.

Outcomes: The strength of the association between DS and the prevalence of ED was evaluated using ORs and 95% CIs.

Results: 5 Studies were eligible for the present analysis, reporting on a total of 2525 diabetic men. Mean age of patients ranged from 42.37–61.65 years in the included studies. The overall prevalence of ED in diabetic men with DS was 74.2% (95% CI 59.0–89.4). The overall prevalence of ED in diabetic men without DS was 37.4% (95% CI 16.2–58.6). The pooled crude OR for these 5 studies was 6.40 (95% CI 2.11–19.38, $P < .05$, $I^2 = 94.6\%$). The pooled OR of 4 multi-variate analyses was 3.08 (95% CI 1.32–4.85, $P < .001$, $I^2 = 83.5\%$).

Clinical Implications: Diabetic men with DS had a significantly increased prevalence of ED, suggesting that ED should be of concern to clinicians when managing diabetic men with DS.

Strengths & Limitations: A strength of this study is that it is the first meta-analysis to assess the prevalence of ED in diabetic men with DS and quantitatively analyze the association between DS and ED risk among diabetic men. A limitation is that all included studies were cross-sectional studies, which may generate bias.

Conclusion: The present meta-analysis of 5 cross-sectional studies suggests that diabetic men showing DS, compared to the diabetic men without DS, have more risk of ED. Further larger prospective cohorts with more power or meta-analysis based on individual patient data need to be conducted to confirm this association. **Wang X, Yang X, Cai Y, et al. High Prevalence of Erectile Dysfunction in Diabetic Men With Depressive Symptoms: A Meta-Analysis. J Sex Med 2018;15:935–941.**

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Key Words: Erectile Dysfunction; Depressive Symptoms; Diabetes; Men

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INTRODUCTION

Diabetes mellitus (DM) is an incurable chronic lifelong metabolic disease that can lead to a myriad of long-term health complications, affecting many functional disorders in the organism such as sexual disorders and depressive symptoms (DS).^{1–3} Sexuality is an important part of personality of a human being. Sexual function plays a vital role in quality of life (QoL) in diabetic patients.^{4,5}

Erectile dysfunction (ED) is one of the most commonly seen sexual dysfunctions among men. The prevalence of ED among

diabetic patients is rather high when compared to those without DM.⁶ Those men who face sexual dysfunction are often embarrassed, confused, or depressed and have lower QoL.⁵

DS are another common complication of DM.⁷ Some researchers have found significant and positive associations between DS and ED.^{1,8–12} However, a few studies did not demonstrate a significant association between depression score and ED among diabetic patients.^{6,13–15}

In 2001, a meta-analysis, including diabetic men and women, demonstrated that comorbid DS was associated with poor sexual function.¹⁶ To our knowledge, there is no published meta-analysis that evaluated this association only in men. In addition, previous studies showed that DS affected about 13.6–90.0% of diabetic men with ED symptoms.^{1,17–20} The exact prevalence of ED remains unclear in diabetic men with DS. Therefore, we performed a meta-analysis using the data from published studies to estimate the exact prevalence of this condition and evaluate the relations between DS and risk of ED among diabetic men.

METHODS

Literature Search

We systematically searched PubMed, MEDLINE, Embase, and Web of Science for English-language studies that evaluated the association between DS and risk of ED among men from 2000–January 2018 without any restrictions. In brief, search terms included “depressive” OR “depression” AND “erectile dysfunction” and (“diabetes” OR “diabetic”). In addition, a manual search of the reference lists of potential relevant and practice guidelines were performed to identify any additional studies.

Inclusion and Exclusion Criteria

The fully published studies were included only if they comprised the following criteria: (1) the subjects were over 18 years old; (2) studies were cross-sectional; (3) studies reported odds ratio (OR) and the corresponding 95% CIs of ED by different DS or provided raw data to calculate crude OR; (4) studies included diabetic men who both experienced and did not experience DS; (5) a validated instrument for the diagnosis of ED was used—International Index of Erectile Function,²¹ Sexual Health Inventory for Men,²² or self-report; (6) a validated instrument for the diagnosis of DS was used; and (7) the study included participants with a validated diagnosis of diabetes (eg, with the criteria suggested by the American Diabetes Association²³).

Studies were excluded if: (1) they were not conducted in human beings; and (2) data were duplicated in another article.

Data Extraction and Quality Assessment

2 authors (X.W. and X.Y.) independently assessed literature and extracted information eligibility. All disagreement was

resolved based on consensus. The following data were summarized from each study: first author, study years, location, age, duration of diabetes, number of DS patients with/without ED, number of non-DS patients with/without ED, OR (95% CI), study quality, and adjustment for covariates. The most adjusted ORs were selected if studies reported more than 1 set of adjustments. Newcastle-Ottawa scale was used to evaluate the quality of each study.²⁴

Statistical Analysis

Statistical analyses were performed using software (Stata, Version 12.0; StataCorp, College Station, TX). The statistical heterogeneity across studies was assessed by the Q statistic test and I^2 statistics test, with significance set at $P < .10$. If there was no significant heterogeneity between studies, the fixed-effect model was used to combine these ORs to obtain an overall OR. Otherwise, the random effects model was applied. Statistical significance was set at $P < .05$ (2-tailed). A sensitivity analysis was also performed to eliminate each study at a time from the meta-analysis. The Begg test and Egger test were used to assess the bias of publication while it was considered significant when $P < .05$.

RESULTS

Literature Search

The process of selecting the studies and participants included in present meta-analysis is summarized in [Figure 1](#). 101 Potentially eligible studies were searched but most of them were excluded after title and abstract screening. After that, a total of 53

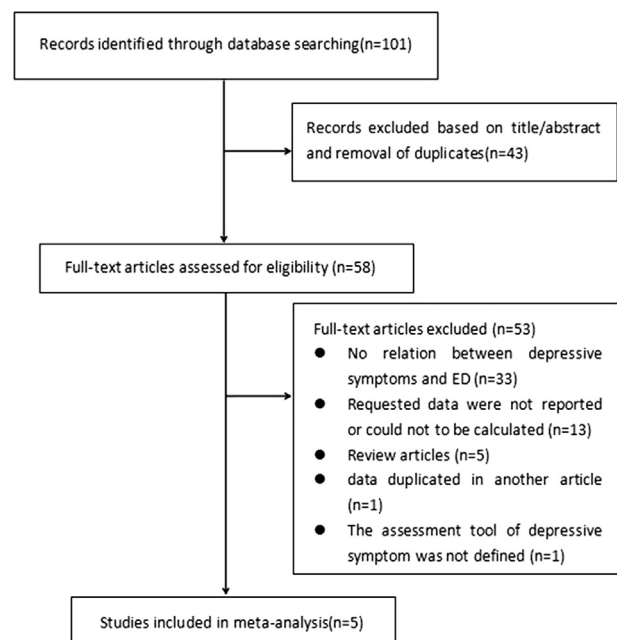


Figure 1. Study selection. Literature search for the meta-analysis. ED = erectile dysfunction.

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