

ANXIETY AND DEPRESSION IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

ALINA MIAH, RUIHUA HOU*; CLINICAL AND EXPERIMENTAL SCIENCES, FACULTY OF MEDICINE, UNIVERSITY OF SOUTHAMPTON, UNITED KINGDOMS *CORRESPONDING AUTHOR: R.HOU@SOTON.AC.UK

Background

Growing evidence from research indicates that Chronic Obstructive Pulmonary Disease (COPD) can increase the likelihood of patients suffering from anxiety and depression, which not only affects quality of life but also impact on disease progression. However, there is little consensus about the prevalence and associated risk factors.

Aims

- The primary aim was to systematically review the prevalence of anxiety and depression in patients with COPD.
- The secondary aim was to identify risk factors contributing to the comorbidity.

Methods

This systematic review and meta-analysis was conducted following Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines were followed. The review protocol was registered on PROSPERO (Ref: CRD42022365979).

Search Strategy

The electronic databases of Ovid MEDLINE, Ovid Embase, PsychInfo, and Web of science were used to find relevant studies published before 1st January 2023. Figure 1 shows the PRISMA flowchart.

Data extraction

Data was extracted using a pre-piloted structured form. Bibliographic data was taken as well as key data from the study were sought out and categorised into these heading: study population, sample size, study design, outcome measures, prevalence of anxiety, prevalence of depression and prevalence rate.

Data Analysis

The pooled prevalence of anxiety and depression were calculated using the random effects model via Comprehensive Meta-Analysis. For the secondary aim each study was carefully looked at to determine if there were any risk factors that were associated with the prevalence of anxiety and depression in COPD patients.

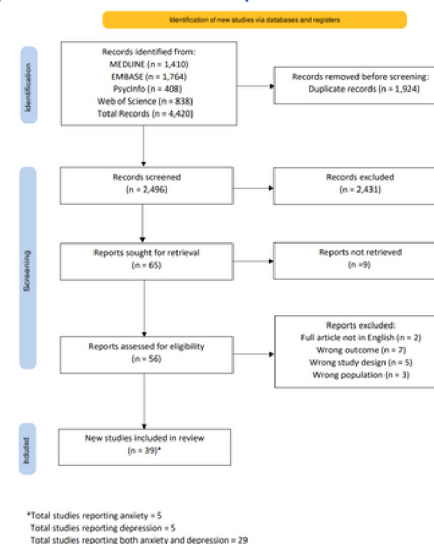


Figure 1 showing the PRISMA flow chart for anxiety and depression

Results

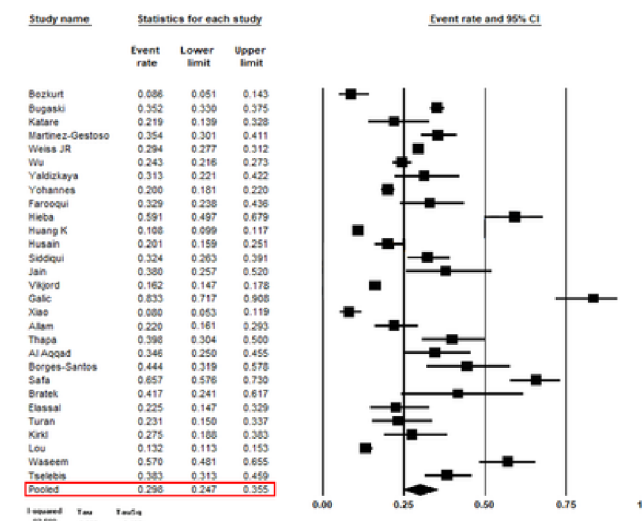


Figure 2 showing the forest plot for anxiety

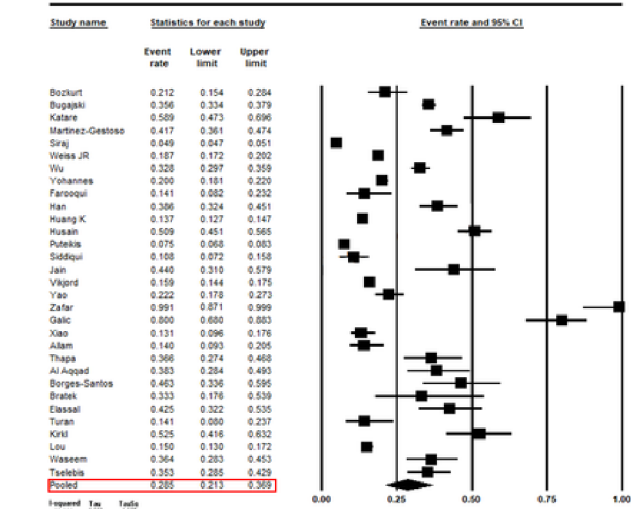


Figure 3 showing the forest plot for depression

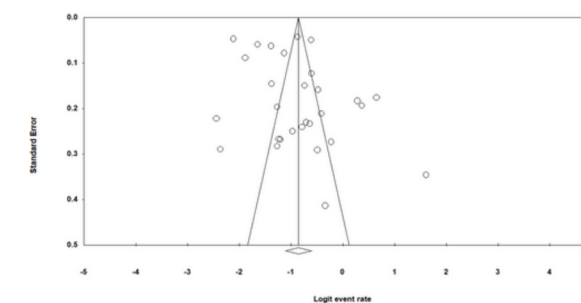


Figure 4 showing the funnel plot for anxiety

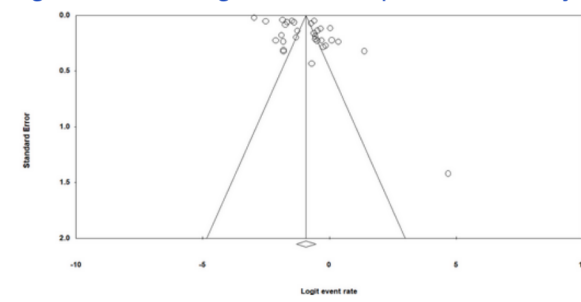


Figure 5 showing the funnel plot for depression

Quality Assessment

All the included studies were graded using the Hawker's quality assessment tool. Each study was graded based on nine components with their individual score for each component. I2 was used to assess heterogeneity of the studies. For anxiety high heterogeneity was found as it was 97%. For depression again high heterogeneity was found at 99%. Publication bias was also checked using funnel plots to highlight any visual biases. Figure 4 showed slight publication bias amongst the studies reporting anxiety. Figure 5 is the funnel plot for the studies reporting depression; this indicates little to no publication bias apart from one study which seems to be an outlier. After having checked the study again, the study was found to be of high quality (as shown in the quality assessment) and hence was included.

Key Results

Prevalence of anxiety

- A total of 29 studies were included for a meta-analysis of the prevalence of anxiety with a total sample size of 17,489.
- A random effects model was used to determine the pooled prevalence of anxiety which resulted to be 0.298 (95% CI 0.247-0.355) or 29.8%. Figure 2 shows the forest plot for anxiety.

Prevalence of depression

- A total of 31 studies were included for a meta-analysis of the prevalence of depression with a total sample size of 66,922
- A random effects model was used to determine the pooled prevalence of depression which was 0.285 (95% CI 0.213-0.369) or 28.5%. Figure 3 shows the forest plot for depression.

Risk factors

- 9 studies explicitly highlighted smoking and nicotine dependence.
- 11 studies also found female COPD patients were more vulnerable.
- 12 studies reported that the severity of COPD was strongly linked to higher risk for severe anxiety and depression.

Conclusions

- This systematic review provides a precise comorbidity of anxiety and depression in COPD patients as well as its associated risk factors.
- Findings from 39 studies indicate high prevalence of both anxiety and depression in COPD patients, suggesting the need for early assessment.
- The study highlights females, smoking, and COPD with more exacerbation are contributing risk factors.
- Further research is warranted to examine underlying mechanisms and identify modifiable risk factors which may offer new intervention approaches to benefit COPD patients with anxiety and depression.