

Association between air pollution and mental illness:
an umbrella systematic review

INPLASY202420062
doi: 10.37766/inplasy2024.2.0062
Received: 15 February 2024
Published: 15 February 2024

Lan, M¹; Yue, X²; Asihaer, G³; Tung, TH⁴; Chien, CW⁵.

Corresponding author:
Meng Lan

1165234458@qq.com

Author Affiliation:
Institute for Hospital Management,
Tsinghua University, Shenzhen
Campus, Shenzhen 518055, China.

ADMINISTRATIVE INFORMATION

Support - No funding.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202420062

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 15 February 2024 and was last updated on 15 February 2024.

INTRODUCTION

Review question / Objective This umbrella systematic review seeks to offer a comprehensive and synthesized overview of the evidence concerning the relationship between air pollution and mental illness.

Condition being studied In recent decades, there has been a notable increase in the number of meta-analyses investigating the impact of air pollution on mental health. This trend represents a positive development, significantly contributing to our understanding of how air pollution affects human society. However, each published meta-analysis has typically maintained a specific focus, whether it be on a particular mental health issue such as depression, schizophrenia, or suicide; on

specific countries like the U.S. and Denmark; or on individual polluting substances.

METHODS

Participant or population None.

Intervention None.

Comparator None.

Study designs to be included The inclusion criteria for studies in this review were as follows: 1) the study had to be a meta-analysis or systematic review; 2) the study's outcome had to be related to the intersection of air pollution and mental health; 3) the study had to provide the measurement of prevalence along with details of each included

study for crosschecking purposes; and 4) the study had to clearly specify the type of mental illness under investigation.

Author 2 - Xiao Yue.
Author 3 - Gulidanna Asihaer.
Author 4 - Tao-Hsin Tung.
Author 5 - Ching-Wen Chien.

Eligibility criteria Studies that did not specify the type of mental illness were excluded from consideration. The screening process involved a thorough examination of titles or abstracts in the initial search results, and the full text was obtained for studies meeting the inclusion criteria.

Information sources In our systematic review, we meticulously examined meta-analysis articles to evaluate the impact of air pollution. Raw data from eligible meta-analyses were obtained, and information such as the first author, publication year, number of studies included in each meta-analysis, study objectives, and outcomes were extracted and summarized as shown in Table 1. Moreover, we retrieved the original datasets from each study for subsequent meta-analysis. To ensure precision in prevalence measurement, we thoroughly investigated each original research study, seeking detailed information.

Main outcome(s) This umbrella review identified evidence supporting an association between air pollution and mental health, particularly in cases of depression, schizophrenia, anxiety and suicide. Further high-quality research is essential to confirm these associations. With the rapidly changing natural world and the growing policy emphasis on understanding the human impact on the environment, improving the design, measurement, and execution of evidence-informed environmental mental health studies becomes imperative.

Quality assessment / Risk of bias analysis Meta-analyses included are susceptible to publication bias, where studies with statistically significant results are more likely to be published. This bias can affect the overall conclusions, potentially leading to an overestimation of the true effect size.

Strategy of data synthesis None.

Subgroup analysis None.

Sensitivity analysis None.

Country(ies) involved China.

Keywords air pollution, mental illness, umbrella systematic review.

Contributions of each author

Author 1 - Meng Lan.
Email: 1165234458@qq.com