

TUBERCULOSIS AND RISK OF ALZHEIMER'S DISEASE AND OTHER DEMENTIAS: SYSTEMATIC REVIEW AND META-ANALYSIS OF OBSERVATIONAL STUDIES

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Background

Dementia and Tuberculosis are two diseases that, are a major public health problem. There is evidence indicating a role for inflammation in the pathogenesis of Dementia and Tuberculosis (TB), and a growing acceptance that infections can contribute to the development of dementia. Therefore, we conducted this study to determine whether TB constitutes a risk factor for developing Alzheimer's disease or other Dementias.

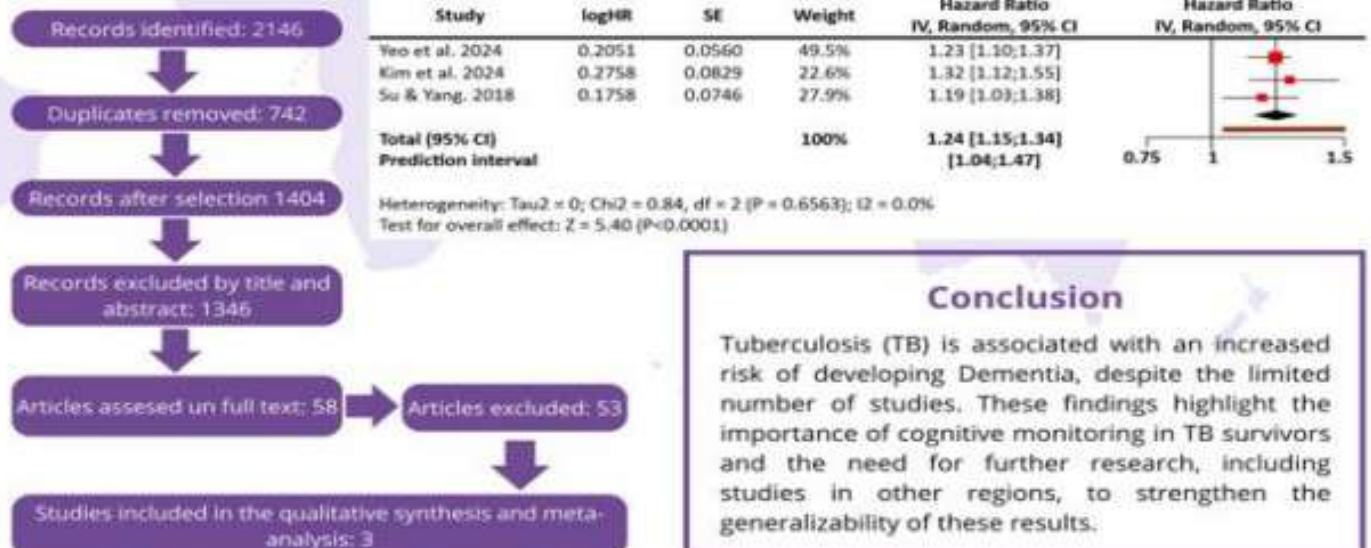
Results

A total of 2146 studies were examined, and 3 were included. The risk of Dementia was significantly higher in people with a history of TB (HR = 1.24; 95% CI: 1.15-1.34), with low heterogeneity ($I^2 = 0\%$). Subanalyses showed a higher risk when TB involved the central nervous system: pulmonary tuberculosis (HR = 1.21; 95% CI: 1.11-1.33) versus central nervous system tuberculosis (CNT) (HR = 1.68; 95% CI: 1.32-2.14), and a higher risk for overall Dementia (HR = 1.28; 95% CI: 1.16-1.40) than for Alzheimer's disease (HR = 1.19; 95% CI: 1.07-1.34).



Method

This systematic review and meta-analysis was designed following the PRISMA guidelines. Observational studies that assessed the association between Tuberculosis (TB) exposure and the subsequent risk of developing Alzheimer's disease or other Dementias were included. A literature search was conducted in the PubMed, Embase, and Scopus databases for the period 2015-2025. Study selection, data extraction, and methodological assessment were performed using standardized procedures, and study quality was assessed using the Newcastle-Ottawa Scale. Adjusted hazard ratios were prioritized for quantitative synthesis, and a DerSimonian-Laird random-effects model was used. Heterogeneity was assessed using the I^2 test, and subgroup analyses were developed to compare pulmonary TB versus central nervous system TB (CNSTB) and by outcome type: Alzheimer's disease versus global Dementia.



Conclusion

Tuberculosis (TB) is associated with an increased risk of developing Dementia, despite the limited number of studies. These findings highlight the importance of cognitive monitoring in TB survivors and the need for further research, including studies in other regions, to strengthen the generalizability of these results.