INPLASY PROTOCOL

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None.

Effect of periodontal disease on Alzheimer's disease: protocol of a systematic review

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Review question / Objective: **P (Patients): Adults over 40 years old; I (Indicator): Periodontal disease; C (Comparator): Absence of periodontal disease; O (Outcome): Onset or progression of Alzheimer's disease; S (Study design): Observational studies.**

Condition being studied: **Alzheimer's disease (AD) is a progressive neurodegenerative characterized by an irreversible degeneration of neurons and neural connections beginning in the hippocampus and extending to the rest of the brain. People affected by Alzheimer gradually lose cognitive abilities and autonomy. These symptoms consequently lead to advanced dementia and eventually to death (World Health Organization, 2006). The cognitive decline that leads to AD has been related to two cardinal neuropathological features, Beta-amyloid plaques (Aβ) and neurofibrillary tangles (Perl, 2010; Serrano-Pozo et al., 2011). The Amyloid plaques consist of deteriorating neuronal processes or neuritis, surrounding deposits of a central core protein called amyloid beta (or beta-amyloid). This protein is derived from a larger molecule called amyloid precursor protein, which is a normal component of nerve cells. The neurofibrillary tangle consists of abnormal accumulations of phosphorylated protein, called tau located within nerve cells. This protein is normally present in neurons. Abnormal chemical changes cause tau molecules to form tangles inside neurons.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 08 August 2020 and was last updated on 08 August 2020 (registration number INPLASY202080033).

INTRODUCTION

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Rationale: The effect of Periodontal Disease (PD) on Alzheimer's Disease (AD) has not been clearly established. Therefore, the purpose of our systematic review was to evaluate the effect of PD on the onset and progression of AD and to determine whether patients with PD would be at greater risk of developing AD compared to periodontally healthy subjects.

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METHODS

Search strategy: ("Periodontal disease" OR "Chronic periodontitis" OR Periodont * OR Periodontitis [Mesh]) AND ("Alzheimer's disease" OR Dementia OR "Cognitive decline" OR "Cognitive impairment" OR "Cognitive dysfunction" OR "Alzheimer's disease" [Mesh]).

Participant or population: Adults over 40 years old.

Intervention: Periodontal disease.

Comparator: Absence of periodontal disease.

Study designs to be included: Observational studies.

Eligibility criteria: Observational of cross-sectional, cohort (retrospective or prospective), or case-control design of studies. Exposure was periodontal disease (PD) and outcome of interest was the onset and/or progression of Alzheimer's disease (AD).

Information sources: The following electronic databases were systematically searched: PubMed/Medline; Science Direct; Web of science and Scopus. The following search equation was used: ("Periodontal disease" OR "Chronic periodontitis" OR Periodont * OR Periodontitis [Mesh]) AND ("Alzheimer's disease" OR Dementia OR "Cognitive decline" OR "Cognitive impairment" OR "Cognitive dysfunction" OR "Alzheimer's disease" [Mesh]). No restrictions were applied to the language and year of publication.

Main outcome(s): Onset of Alzheimer's disease.

Additional outcome(s): Progression of Alzheimer's disease.

Quality assessment / Risk of bias analysis: The methodological quality of included studies was assessed using the Newcastle-Ottawa (NOS) scale by two authors.

Strategy of data synthesis: The qualitative evaluation criteria comprised eight items belonging to three broad domains, namely: (1) sample selection of study groups, (2) comparability of groups and (3) the ascertainment of either the exposure or outcome of interest for case-control or cohort studies respectively (Stang, 2010).

Subgroup analysis: For cases: mild, moderate and severe dementia; For exposition: mild, moderate and severe periodontitis.

Sensibility analysis: Not applicable.

Language: English.

Country(ies) involved: Morocco.

Keywords: Periodontal disease; inflammation; Alzheimer's disease; Neurodegeneration; Systematic review.

Contributions of each author:

Author 1 - Sara LATTAF - SL did the literature search, selected studies, and extracted relevant information. SL synthesized the data and wrote the first draft of the manuscript.

Author 2 - Lamiaa Abdallaoui-Maan - LA synthesized the data and revised successive drafts of the paper and approved the final version.

Author 3 - Amal Bouziane - AB conceived the idea of the study and developed the protocol. AB did with SL the literature search, selected studies, and extracted relevant information. AB revised successive drafts of the paper and approved the final version. AB supervised the overall work and is the guarantor of the review.