INPLASY PROTOCOL

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None declared.

Gender differences in non-apnoea sleep disorder among periodontitis patients: A systematic review

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Review question / Objective: The aim of the present systematic review was to assess the difference in men and women in regards to non-apnoea sleep disorder in association with periodontal disease. The focused question was formulated according to the PECO acronym: All adults (men and women) (Population), any periodontal condition (Exposure); individuals with no periodontal disease (Comparison); Non-apnoea sleep disorder (NASD) (Outcome). P) Types of participants: Adult participants (Men and Women) (E) Types of exposure: any periodontal condition (C) Comparison between interventions: Individuals with no periodontitis (O) Non-apnoea sleep disorder (NASD).

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 05 April 2023 and was last updated on 05 April 2023 (registration number INPLASY202340010).

INTRODUCTION

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Rationale: Poor sleep is associated with poor health, cognitive- and functional impairment, and mortality in older population (Ohayon 2005, Ancoli-Israel 2009). Poor sleep has been shown to affect older women resulting in poorer physical performance and greater functional limitations (Goldman 2007). Shorter sleep duration has been implicated as a risk factor for a range of systemic diseases and conditions such as obesity, diabetes, hypertension, coronary heart disease, and also been associated with increased inflammatory markers and impared immune system function, which have a deep impact on the occurrence and progression of several infectious diseases (Mullington 2010, Zjelinski 2011, Al-Zahrani 2021). It has been suggested that different psychosocial factors and poor sleep quality may have an effect on poor health outcomes and increased biological risk for disease (Friedman 2011). Sleep may be affected by variation in reproductive hormones, stress, depression, aging, life/role transitions, and other factors (Nowakowski 2013). Research has shown that women report more sleep difficulties (Akerstedt 2002, Lindberg 1997). Sleep in women is affected at least partially by hormonal factors, with women typically suffering from sleep disturbance in connection with the menstrual cycle, pregnancy, and menopause (Mehta 2015).

There has been an increasing number of studies, systematic reviews and cross-sectional studies recently linking sleep and periodontitis in various populations. A direct and independent association between sleep duration and the prevalence of periodontitis which was found to affect and include females, non-smokers, and lower education amongst others (Romandini 2017). Sleep may have an effect on periodontitis because inflammation is characteristic for periodontitis and poor sleep (Velázquez-Moctezuma 2010, Meier-Ewert 2004). Inadequate sleep may be associated with lower number of present teeth and periodontal diseases (Muniz 2021).

Recent systematic reviews demonstrated an association between periodontal diseases and sleep disturbances (Schmidlin 2020 and Wu 2023), but to the best of our knowledge, there are currently no systematic reviews which examine the differences in both genders in sleep and periodontitis.

Condition being studied: According to the latest global oral health status report by the WHO, periodontal disease is the leading cause of tooth loss worldwide. It affects 47.2% of adults aged 30 years and older and as periodontal disease increases with age, 70.1% of adults 65 years and older have periodontal disease, according to the Centers for Disease Control and Prevention (CDC). Periodontal disease is more frequent in men than women (56.4% vs 38.4%).

According to the WHO, the number of people 60 years and older is projected to grow 56 percent to 1.4 billion in 2030 from 962million in 2017. Globally, women have a longer life expectancy which accounted for 54 percent ≥60 years and 61 percent aged 80 years and above (Decade of healthy aging 2020-2030, WHO 2019).

It is well documented that sleep disturbances increase with increasing age with inherent differences between gender (Friedman 2011, Guidozzi 2015). More than half of older patients report difficulties with sleep (Foley 1995). Nevertheless, sleep complaints should not be considered as part of normal aging and should be checked for underlying causes and illnesses (Ancoli-Israel 2008, Luca 2015).

METHODS

Search strategy: The screening process of databases include PUBMED, EMBASE and COCHRANE were searched with no restrictions on language or publication date.

Periodontal OR Chronic Periodontitis OR Periodontitis AND Sleep OR Sleep quality OR Sleep duration AND Severity OR Non-apnoea sleep OR non-sleep disorder

The following search terms and search protocol were used in this systematic search: (Periodontitis) OR gingivitis) OR periodontal disease) OR gum disease) OR periodontal attachment loss) OR alveolar bone loss) OR clinical attachment loss) OR

clinical attachment level) OR periodontal pocket depth) OR tooth loss) OR teeth loss. The terms and keywords were adapted for each database, as necessary. Detailed search protocols for each database are available as a supplementary material.

Participant or population: Adult participants.

Intervention: Any periodontal condition.

Comparator: Individuals with no periodontitis.

Study designs to be included: No limitation on study designs.

Eligibility criteria: Clinical and not self-reported diagnosis of periodontal disease; studies reporting any type of non-apnoea sleep disorder outcomes.

Information sources: Electronic databases, contact with authors, hand searches.

Main outcome(s): Sleep abnormality and periodontal or gingival parameters.

Quality assessment / Risk of bias analysis: Main outcomes will be reported in a qualitative manner.

Strategy of data synthesis: Not reported.

Subgroup analysis: Not reported.

Sensitivity analysis: Not reported.

Country(ies) involved: Switzerland and Austria (University of Zurich, Center of Dental Medicineand, Switzerland and University Clinic of Dental Medicine & Oral Health, Medical University of Graz, Graz, Austria.

Keywords: Sleep ;Periodontal disease; Periodontitis; Non-apnoea sleep; Sleep duration; Non-sleep disorders; Sleep deprivation; sleep quality.

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