

## Prevalence of Temporomandibular Disorders among Military Personnel: A Systematic Review and Meta-analysis

INPLASY202440022

doi: 10.37766/inplasy2024.4.0022

Received: 04 April 2024

Published: 04 April 2024

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**ADMINISTRATIVE INFORMATION****Support** - King Khalid University.**Review Stage at time of this submission** - Completed but not published.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202440022**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 April 2024 and was last updated on 04 April 2024.**INTRODUCTION**

**Review question / Objective** 1. The main aim of this study is to identify and critically appraise the evidence of the prevalence of TMD among military personnel by identifying published scholarly journal articles and systematically reviewing the evidence of the association. 2. The association between military service and the onset and development of TMD.

**Rationale** This study's results highlight the complex correlation between parafunctional oral habits, psychological distress, and TMD symptoms associated with military service. Understanding the associations is critical to developing effective management strategies, including postural optimization and personalized treatment approaches for minimizing TMD severity. Moreover, this study emphasizes the importance of adopting

evidence-based military medicine regarding oral health.

**Condition being studied** Temporomandibular disorders (TMD) affect the jaw region, masticatory muscles and surrounding structures, thus interfering with typical temporomandibular joint (TMJ) function, including chewing. TMD is associated with discomfort and jaw impairment, causing pain and challenges in daily activities like chewing. The TMJ involves the mandibles, temporal bone, ligaments, muscles, and the articular disc. Additionally, the joint allows for various movements essential for chewing, such as facial and chewing. Various types of temporomandibular disorders affect individuals, including myofascial pain syndrome, associated with pain in the muscles responsible for jaw movements. Additionally, internal derangement of the TMJ involves articular disc dislocation. Other

TMDs include bruxism, which involves jaw clenching and teeth grinding, causing muscle tension and abnormal joint function.

## METHODS

**Search strategy** An all-inclusive electronic database search for peer-reviewed scholarly journal articles was conducted via PubMed, Cochrane Library, Google Scholar, ScienceDirect, and Dimensions. The following search terms were used in different combinations depending on the database to optimize the results: temporomandibular disorders, musculoskeletal disorders, military, army, navy, air force, veterans, and conscripts.

**Participant or population** Military personnel, including veterans and individuals associated with active-duty military service.

**Intervention** Not applicable.

**Comparator** TMD prevalence among military personnel versus non-military subjects.

**Study designs to be included** Case-control, cross-sectional and observational studies were included in this study. This study preparation and reporting adhered to the Preferred Reporting of Items for Systematic Reviews and Meta-analyses.

**Eligibility criteria** This study included research articles reporting the prevalence of TMD among military personnel. The potential articles were selected based on modified PICOS criteria.

**Information sources** An all-inclusive electronic database search for peer-reviewed scholarly journal articles was conducted via PubMed, Cochrane Library, Google Scholar, ScienceDirect, and Dimensions.

**Main outcome(s)** Prevalence of TMD.

**Additional outcome(s)** Military populations are at an increased risk of developing signs and symptoms of TMD, including TMJ dysfunction, jaw clenching, and teeth grinding. In addition, there is a high prevalence of bruxism among military populations, posing a significant risk factor for TMD development.

**Data management** Data from the included studies were systematically extracted and tabulated in a predesigned Microsoft Excel workbook using Microsoft Excel version 2021. The extracted data included the study authors, design, settings,

duration, sample size, characteristics, study purpose, outcome measures, and finding.

**Quality assessment / Risk of bias analysis** The extracted data were thematically analyzed and reported according to the predominant themes. In addition, quantitative data were analyzed using Review Manager software version 5.4.1. This study utilized a full intervention review approach, using an inverse variance statistical model with a random effects analysis model. An odds ratio effect measure was used in the statistical analysis utilized by most to report the effect sizes. Quantitative data were analyzed using odds ratio. In addition, a reviewer converted other data types like dichotomous data and risk and hazard ratios for consistency in the analyses. Moreover, the publication bias of the reported outcome was assessed using Egger's test.

**Strategy of data synthesis** The included studies were assessed for methodological quality using the National Institute of Health quality assessment tool for cross-sectional and observational studies.

**Subgroup analysis** The data was compiled from a variety of articles: • Author(s), year of publication, country, study design. • Total number of patients/datasets. • Training/validation datasets • Test datasets.

**Sensitivity analysis** Not Applicable.

**Language restriction** Only articles in English.

**Country(ies) involved** Saudi Arabia.

**Keywords** TMJ, TMD disorders.

**Dissemination plans** All the data and the article will be shared after the publication.

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