

# Tinnitus in Temporomandibular Disorders patients: any clinical implications from research findings?

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## A Commentary on

**Skog C, Fjellner J, Ekberg E, Häggman-Henrikson B.**

Tinnitus as a comorbidity to temporomandibular disorders-A systematic review. *J Oral Rehabil* 2019; **46**: 87-99. doi: 10.1111/joor.12710. [Epub ahead of print] Review. PubMed PMID: 30126027.

## Abstract

**Data sources** PubMed, the Cochrane Library and the Web of Science databases supplemented by a search of selected textbooks and the reference lists of included papers.

**Study selection** Two reviewers independently selected studies. Studies involving more than ten TMD patients published in English or Swedish were considered.

**Data extraction and synthesis** Two reviewers independently abstracted data and assessed risk of bias using the Joanna Briggs Institute prevalence critical appraisal pool and Newcastle-Ottawa Scale.

**Results** Twenty-five studies were included. Seventeen described the prevalence or incidence in a TMD population, five reported prevalence and treatment outcomes and three treatment outcomes only. Prevalence of tinnitus ranged from 3.7% to 70% (median 42.3%) in TMD patients compared with 1.7% to 26% (median 12%) in control groups. Only one study provided evidence that treatment could improve symptoms compared with no treatment.

**Conclusions** This systematic review found a higher prevalence of tinnitus in patients with TMD compared with the general population. This supports the comorbidity between TMD and tinnitus; however, all but one of the included primary studies on treatment of TMD lacked control groups, which means that future research should target the pathophysiological association.

## Commentary

The paper reviewed the literature on the prevalence of tinnitus in temporomandibular disorders (TMD) patients as well as on the improvement of tinnitus with TMD treatment. This is a very interesting topic, given the frequent clinical observations of comorbidity between the two conditions and the hypotheses of correlation dating back to almost a century ago.<sup>1</sup> After decades of debate, it seems there is still need to scratch the surface of this

## Practice points

- The prevalence of tinnitus in patients with temporomandibular disorders is not negligible
- There are some clinical suggestions that, when present in TMD patients, tinnitus may improve with TMD treatment
- The self-reported nature of tinnitus and the concurrent importance of psychological aspects in TMD patients makes it complex to get deeper into any cause-and-effect issue
- Hypothesis-driven researches are needed to address the differential frequency of tinnitus in patients with muscle pain or joint derangements.

complex relationship. To do that, the authors browsed PubMed, the Cochrane Library and the Web of Science databases on two occasions, with a last update on January 2017. They structured the literature search in two parts, addressing the two separate aims, and found a total of 25 articles for review.

The first aim, *viz.*, to assess the prevalence of tinnitus in TMD patients, was the topic of 22 articles, reporting a median prevalence of 42.3% (range 3.7-70%) in over 13,000 patients and of 12% (range 1.7-26%) in over 33,000 controls. The second aim, *viz.*, to evaluate the effects of TMD treatment on tinnitus, was the topic of eight articles, of which only one had a control group, and including more than 500 patients undergoing different TMD treatment protocols. In general, findings showed that the severity of tinnitus may decrease with TMD treatment. No further processing of data has been made due to the heterogeneity of sources. Quality assessment showed that the overall level of evidence for the review findings is low.

The topic of the review is of undoubted interest for the practitioners involved in the field of TMD clinics, where an interaction with ENT specialists is sometimes required. On the other hand, the data are not mined deeply. The general feeling is that this review does not add too much knowledge with respect to what a reader can perceive with a quick overview of the published literature. Indeed, it does not lead to any concrete suggestions neither for the clinical (eg identification of tinnitus patients in relation to the TMD problem, management of tinnitus, refinement of diagnostic strategies) nor the research setting (eg suggestions to improve knowledge with future researches). Overall, the review does not contain any relevantly new information for an expert reader, which is a problem that is currently emerging as a publishing trend in the field of TMDs.<sup>2</sup>

More specifically, the umbrella term 'TMD' is used throughout the manuscript, whilst some considerations about the different TMD diagnoses should be expected to avoid any generic conclusions about the lack of knowledge and the need for future studies. As a parallel consideration, the choice of not commenting separately on the studies adopting questionnaire-based and those studies adopting

GRADE rating



standardised clinical RDC/TMD-based diagnoses complicates an evaluation of the literature. For instance, limiting the review to papers using the RDC/TMD would have shown a narrower range of tinnitus prevalence (30.4-70%) with respect to the inclusion of questionnaire studies. Such strategy could have led to some potential suggestions concerning the relationship between tinnitus and the different TMD symptoms. Besides, reporting data by gender and, more important, by chronicity of TMDs and the psychosocial profile could have been important additions to the review.

In the clinical setting, it is now well accepted that TMD or TMD-like symptoms may be present in individuals with or without important psychosocial impairment,<sup>3</sup> with the former condition being the more difficult to manage and having the higher frequency of comorbid signs/symptoms. Does it mean that patients with severely impaired RDC/TMD axis II profiles have more tinnitus than others? I recommend considering that, based on current knowledge, any TMD research not taking into proper account for axis II findings cripples the core principles of the biopsychosocial model of disease.<sup>4</sup> Moreover, is there any peculiar pattern of muscle or joint disorder that is more frequently associated with tinnitus? Commenting on these aspects is a fundamental step to upgrade the quality of primary research on this complex topic. As such, a more tailored quality assessment in the review, either by evaluating the articles or by introducing some quality thresholds for inclusion, might be expected.

Similar considerations apply to the papers on the effect of TMD treatments on tinnitus. As the authors correctly pointed out, several papers are single-handed efforts by the same author,

carrying the risk of overlap of data. In these cases, it is usual to try to get deeper into this issue by contacting the author(s) or, at least, by reporting his/her lack of answer to the request.

Thus, in general, this review is another piece to add to the complex puzzle of temporomandibular disorders comorbidities and clinical manifestation. It concludes with a quite typical generic statement that there is lack of strong evidence and that further researches are needed. With some extra efforts to refine or judge the quality of the reviewed papers and to suggest some concrete research ideas or clinical implications, the contribution to the puzzle could have been even more important.

## References

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*Evidence-Based Dentistry* (2019) **20**, 30-31. doi:10.1038/s41432-019-0012-y