

# THE ROLE OF SLEEP DYSFUNCTION IN OROFACIAL / TEMPOROMANDIBULAR PAIN ONSET AND PROGRESSION: A SYSTEMATIC REVIEW

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## INTRODUCTION

- Orofacial pain and temporomandibular disorders (TMD) are often disabling and result in \$4.3 billion dollars spent annually.<sup>1</sup>
- The complex physiological and psychological interplay between pain and sleep have been well established, with sleep dysfunction having been shown to be a potential precipitating variable for the onset of TMD pain.<sup>2,3</sup>
- Identifying evidence informed self-report measures (SROMs) for capturing sleep dysfunction in populations with TMD is integral to delivering optimal care.

## PURPOSE

- The purposes of this study were: 1) to identify the reliability and validity of SROMs exploring sleep quality in patient populations with orofacial / TMD pain and 2) to examine the diagnostic and prognostic abilities of these SROMs.

## METHODS

Diagnosis	Sleep	Questionnaires/Instruments/Tools	Psychometrics
temporomandibular joint disorder*, temporomandibular joint*, temporomandibular joint dysfunction*, temporomandibular joint dysfunction syndrome, temporomandibular joint diseases, TMJ pain, facial pain, masticatory myalgia, craniomandibular, jaw pain, craniomandibular disorders,	sleep initiative and maintenance disorders, sleep disturbance*, sleep disorder*, sleep quality, sleep deprivation, dyssomnias,	questionnaire or survey or scale or instrument or inventory, outcome measure*, outcome* assessment*, self report measure*, clinical assessment tool*, surveys and questionnaires, patient reported outcome measures, questionnaires,	psychometric*, clinimetric*, reproducibility, reliability, responsiveness, measurement error, standard error of measurement, validity, sensitivity and specificity, odds ratio, reproducibility of results, validation studies, reliability and validity

Table 1: Search Strategy

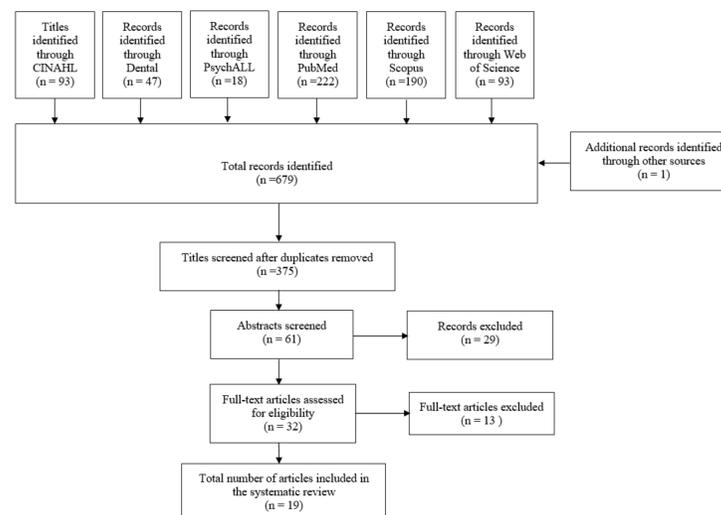


Figure 1: PRISMA Flow Diagram

## RESULTS

Year	Author	Patient Selection	Index Text	Reference Standard	Flow and Timing
2001	Macfarlane et al.	Red	Yellow	Yellow	Yellow
2005	de Leeuw et al.	Green	Yellow	Yellow	Yellow
2005	Van Grootel et al.	Yellow	Yellow	Yellow	Yellow
2006	Selaimen et al.	Red	Red	Yellow	Yellow
2015	Lei et al.	Green	Yellow	Yellow	Yellow
2015	Schmitter et al.	Yellow	Yellow	Yellow	Yellow
2016	Park et al.	Green	Yellow	Yellow	Yellow
2016	Reiner-Sitar et al.	Yellow	Yellow	Yellow	Yellow
2017	Benoliel et al.	Green	Yellow	Yellow	Red
2017	Kothari et al.	Yellow	Yellow	Yellow	Yellow

Table 2: QUADAS Risk of Bias Assessment (high=red, low=green, unclear=yellow)

Year	Author	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting
2002	Yatani et al.	Yellow	Red	Yellow	Green	Yellow	Green
2013	Ohrbach et al.	Green	Yellow	Green	Green	Green	Green
2016	Visscher et al.	Yellow	Red	Yellow	Green	Green	Green
2016	Sanders et al.	Yellow	Red	Yellow	Green	Yellow	Yellow
2017	Sanders et al.	Green	Yellow	Yellow	Green	Yellow	Green

Table 3: QUIPS Risk of Bias Assessment (high=red, low=green, unclear=yellow)

- Seven different SROMs were identified: Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale, Insomnia Symptom Questionnaire, Self-Rating Scale of Sleep, Symptom Checklist 90-Revised (SCL-90R), Sleep Assessment Questionnaire, Fatigue Assessment Instrument.
- Additionally, questions drawn from other SROM's were included, though item analysis were not presented to support their use.
- QUADAS assessment limited by lack of gold standard test in all articles.
- The OPPERA studies (n=3) generated the lowest risk of bias in QUIPS.
- Only the PSQI has undergone psychometric analysis in the TMD population.

## SUMMARY AND CONCLUSIONS

- Sleep is an emerging contributing health behavior to the development of TMD pain.
- Clinicians should consider using the Pittsburgh Sleep Quality Index (PSQI) to capture sleep dysfunction in patients with TMD.
- Further investigation of SROM clinimetrics is needed to identify efficient and effective clinical measures.

## REFERENCES

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- Finan PH, Goodin BR, Smith MT. The association of sleep and pain: an update and a path forward. *Journal of Pain*. 2013;14(12):1539-1552.
- Orbach R, et al. Clinical orofacial characteristics associated with risk of first-onset TMD: the OPPERA prospective cohort study. *Journal of Pain*. 2013;14(12):S2:T33-T50