


**Research Article**

## Investigation of Snoring and Obstructive Sleep Apnea Using Portable Polysomnography in Patients with Temporomandibular Disorder

Yeon-Hee Lee<sup>1\*</sup>, Q-Schick Auh<sup>1</sup>, and Eun-Jae Chung<sup>2</sup>

### Abstract

**Objective:** To investigate snoring and obstructive sleep apnea (OSA) in patients with temporomandibular disorder (TMD) using portable polysomnography and identify sex-based differences in clinical features and sleep-related results

**Methods:** Seventy consecutive patients (44 female; mean age, 46.6918.18 years) with myofascial pain-associated TMD, diagnosed based on the criteria for TMD Axis I, were enrolled. Sleep quality and quantity were measured using portable polysomnography. Clinical characteristics were investigated using well-structured standardized reports on clinical signs and symptoms, questionnaires, and clinical examination by TMD specialists.

**Results:** Among 70 TMD patients, 50.0% had OSA and 15.7% had snoring, with no sex-based differences. The mean Mallampati scores for OSA prediction ( $2.69 \pm 1.12$  vs.  $1.70 \pm 0.82$ ,  $p < 0.001$ ), mean body mass index (BMI) ( $24.94 \pm 1.78$  vs.  $22.02 \pm 2.24$ ,  $p < 0.001$ ), and ratio of overweight patients (57.7 vs. 11.4%) with BMI  $\geq 25$  were significantly higher in males than in females (all  $p < 0.001$ ). Conversely, the mixed sleep apnea index was significantly higher in females than in males ( $0.81 \pm 0.80$  vs.  $0.44 \pm 0.54$ ,  $p = 0.022$ ). Female sex was associated with the absence of snoring (OR=0.146,  $p = 0.022$ ). Based on the area under curve (AUC) value for snoring prediction, Mallampati score was the strongest predictor (AUC>0.932,  $p < 0.001$ ), followed by BMI, overweight, and obstructive sleep apnea index (AUC>0.8, all  $p < 0.001$ ).

**Conclusions:** Our results support the necessity of investigating sex-based differences when examining sleep problems, including snoring and OSA, in TMD patients. Mallampati scoring could be a useful tool for physical examination prior to polysomnography. Sleep and biopsychosocial factors are important for the diagnosis and treatment of TMD.

**Keywords:** Snoring; Obstructive sleep apnea; Mallampati score; Overweight; Polysomnography; Temporomandibular disorder

### Introduction

Temporomandibular disorder (TMD) is a collective term for conditions characterized by pain and dysfunction of the temporomandibular joint (TMJ), masticatory muscles, and the surrounding structures. Symptoms of TMD include TMJ pain, masticatory muscle pain, TMJ noise, mouth-opening limitation, headache, sleep problems, and accompanying psychological deterioration [1]. The prevalence of TMD varies widely with the study methodology, ranging between 5% and 87% [2,3]. Female patients have TMD

### Affiliation:

<sup>1</sup>Department of Orofacial Pain and Oral Medicine, Kyung Hee University Dental Hospital, Kyung Hee Medical center, Kyung Hee University, Seoul, Korea

<sup>2</sup>Otorhinolaryngology-Head & Neck Surgery, SNUCM Otorhinolaryngology-Head & Neck Surgery, Seoul National University Hospital Otorhinolaryngology-Head & Neck Surgery, Seoul, Korea

### Corresponding author:

Yeon-Hee Lee, Department of Orofacial Pain and Oral Medicine, Kyung Hee University Dental Hospital, Kyung Hee Medical center, Kyung Hee University, Seoul, Korea

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