



TEMPOROMANDIBULAR JOINT DISORDERS IN THE ELDERLY: A LITERATURE REVIEW

Susanna Halim^{1*} Sharon Altin Taqwani²

¹Department of Master of Dental Science, Faculty of Medicine and Dentistry, Prima Indonesia University, ²Student of Master of Dental Science, Faculty of Medicine and Dentistry, Prima Indonesia University
e-mail: SusannaHalim@unprimdn.ac.id

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ABSTRACT

Temporomandibular joint (TMJ) disorder is one of the orofacial problems often found in the elderly due to degenerative changes, decreased musculoskeletal function, and systemic conditions that accompany the aging process. Elderly people tend to experience decreased tissue elasticity, bone resorption, tooth loss, and the use of dentures that can affect the stability and function of the temporomandibular joint. The aim is to examine the characteristics, risk factors, clinical manifestations, and management of TMJ disorders in the elderly. Literature search methods from various national and international scientific databases with keywords related to TMJ disorders and the elderly. Selected articles include observational studies, case reports, and relevant review studies. Results and Discussion show that TMJ disorders in the elderly are generally characterized by joint pain, limited mouth opening, joint sounds, and impaired masticatory function that can impact quality of life. Frequently reported predisposing factors include posterior tooth loss, occlusal imbalance, degenerative changes in the joints, and systemic diseases such as osteoarthritis. Management of TMJ disorders in the elderly needs to consider the general condition of the patient and be conservative, including education, pharmacological therapy, physiotherapy, and the use of occlusal appliances if necessary. Conclusion: TMJ disorders in the elderly are multifactorial conditions that require a holistic and individual approach to improve the function and quality of life of patients.

Keywords :temporomandibular joint, TMJ disorders, elderly, aging, orofacial disorders

ABSTRAK

Gangguan sendi temporomandibular (TMJ) adalah salah satu masalah orofasial yang sering ditemukan pada lansia karena perubahan degeneratif, penurunan fungsi muskuloskeletal, dan kondisi sistemik yang menyertai proses penuaan. Lansia cenderung mengalami penurunan elastisitas jaringan, resorpsi tulang, kehilangan gigi, dan penggunaan gigi palsu yang dapat memengaruhi stabilitas dan fungsi sendi temporomandibular. Tujuannya adalah untuk meneliti karakteristik, faktor risiko, manifestasi klinis, dan penanganan gangguan TMJ pada lansia. Metode penelusuran literatur dari berbagai basis data ilmiah nasional dan internasional dengan kata kunci yang berkaitan dengan gangguan TMJ dan lansia. Artikel yang dipilih meliputi studi observasional, laporan kasus, dan studi tinjauan yang relevan. Hasil dan Diskusi menunjukkan bahwa gangguan TMJ pada lansia umumnya ditandai dengan nyeri sendi, keterbatasan pembukaan mulut, bunyi sendi, dan gangguan fungsi pengunyah yang dapat memengaruhi kualitas hidup. Faktor predisposisi yang sering dilaporkan meliputi kehilangan gigi posterior, ketidakseimbangan oklusi, perubahan degeneratif pada sendi, dan penyakit sistemik seperti osteoarthritis. Penanganan gangguan TMJ pada lansia perlu mempertimbangkan kondisi umum



pasien dan bersifat konservatif, termasuk edukasi, terapi farmakologis, fisioterapi, dan penggunaan alat oklusal jika diperlukan. Gangguan TMJ pada lansia merupakan kondisi multifaktorial yang membutuhkan pendekatan holistik dan individual untuk meningkatkan fungsi dan kualitas hidup pasien.

Kata kunci: *sendi temporomandibular, gangguan TMJ, lansia, penuaan, gangguan orofasial*

INTRODUCTION

The temporomandibular joint (TMJ) is a highly active bilateral synovial joint that plays a vital role in various oral functions such as chewing, speaking, swallowing, and breathing. TMJ dislocation occurs when the mandibular condyle protrudes from the glenoid fossa, causing severe pain due to involvement of the vascular and nerve-rich retrodiscal tissue. As the global aging population increases, recurrent TMJ dislocations are more common in older adults than acute cases. In older adults, management of TMJ dislocations requires special attention due to limited healing, edentulous conditions, and the presence of comorbidities. Conservative and minimally invasive approaches are preferred over open surgical procedures, especially in older adults with complex medical conditions or neuromuscular disorders. However, literature specifically addressing the treatment, prevention of recurrence, and post-reduction management of TMJ dislocations in the elderly is still limited, necessitating a more comprehensive review of the etiology, pathology, treatment options, and complications of TMJ dislocations in the geriatric population (Rath & Sahoo, 2024).

Temporomandibular joint disorder (TMD) is a degenerative musculoskeletal disorder characterized by morphological and functional changes resulting from an imbalance in joint structure, function, and occlusal relationships, leading to dysfunction of the articular disc and associated muscles. Degenerative disc changes are more common in women, increase with age, and are associated with trauma, joint overload, or disc displacement. The progression of TMJ disease can be influenced by inflammatory and non-inflammatory diseases, as well as developmental disorders. Diagnosis is generally confirmed by imaging such as MRI, CT, or CBCT. Although TMD often causes pain and reduces quality of life, the selection of the most effective therapy remains debated. In severe cases of TMJ with significant pain and functional impairment, total TMJ joint replacement is a radical treatment option with a low failure rate and good biomechanical stability, and has been shown to improve patient quality of life. This study aims to evaluate the clinical performance of total TMJ replacement in patients with degenerative and/or inflammatory joint disease (Ravelo et al., 2025).

TMD is more common in women than in men and has an inverted U-shaped prevalence pattern, with a peak at 20–40 years of age, unlike other musculoskeletal diseases that increase with age. Although the prevalence of TMD in the elderly and very elderly (≥ 80 years) remains significant, data comparing the clinical characteristics of TMD across age groups are limited. Recent evidence suggests that in those aged ≥ 65 years, the most predominant form of TMD is degenerative joint disorder, while clinical symptoms are often considered mild and self-limiting. However, given that degenerative joint disease can cause pain, functional limitations, and reduced quality of life, further studies with larger sample sizes are needed to evaluate the relationship between TMJ degeneration, pain intensity, and clinical characteristics of TMD in the elderly compared to other age groups (Lee et al., 2026).

Increasing life expectancy in developed countries has led to a continued increase in the number of geriatric patients visiting dental practices. The aging process reduces the functional capacity of tissues and organs, resulting in deterioration of systemic and oral health. This



situation demands a more conscious and comprehensive approach to the health of the elderly. Oral and systemic health are interconnected, with systemic diseases such as atherosclerosis, pulmonary disease, and diabetes mellitus both affecting and being affected by oral health status. Various studies have shown that older adults have poor oral health, characterized by a high prevalence of caries, tooth loss, edentulism, periodontal disease, mucosal lesions, and inadequate oral hygiene. Contributing factors include a lack of awareness of the importance of oral hygiene, limited access to dental health services, and the influence of systemic diseases and medication use. Based on this description, a comprehensive understanding of temporomandibular joint disorders in the elderly is necessary. Radiographic examinations, particularly panoramic radiographs, play a crucial role in identifying pathological abnormalities that can impact general health and dental treatment planning. Although panoramic radiography has been widely used to assess changes in jawbone and certain structures due to aging, other findings such as cysts, tumors, and impacted teeth in the elderly have received less attention. Therefore, this study aims to evaluate the clinical manifestations and radiographic findings in elderly patients and compare them with those in non-elderly individuals to improve epidemiological knowledge and support dental health service planning in the elderly population (Bozdemir, 2024).

RESEARCH METHODS

Temporomandibular joint (TMJ) examination methods in older adults in clinical research generally begin with a structured history and clinical examination using the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) as the gold standard. The DC/TMD is widely used in recent journals due to its high validity and reliability in establishing a diagnosis of TMJ disorders. This examination includes an assessment of orofacial pain, limited mandibular movement, joint sounds such as clicking or crepitus, and a history of masticatory dysfunction. In older adults, the history also emphasizes systemic factors, denture use, tooth loss, and degenerative diseases that can affect temporomandibular joint conditions.

In addition to the history, a physical examination is performed, including measuring maximum mouth opening, lateral and protrusive mandibular movements, and palpation of the TMJ joint and masticatory muscles to assess for tenderness. Auscultation, or dynamic palpation while the patient opens and closes the mouth, is used to detect joint sounds. In some studies, this clinical examination is combined with a screening questionnaire, such as the Fonseca Anamnestic Index, which aims to quickly and systematically identify the severity of TMD symptoms, particularly in elderly populations in epidemiological studies.

To support clinical findings, journals over the past five years have also widely recommended the use of imaging examinations. Magnetic resonance imaging (MRI) is used as the gold standard in assessing the soft tissues of the TMJ, including the position and condition of the articular disc, as well as the presence of inflammation or degenerative changes in the tissue. Meanwhile, Cone-Beam Computed Tomography (CBCT) is often used to evaluate changes in the joint's bony structure, such as condylar erosion, osteophytes, or signs of TMJ osteoarthritis, which are often found in the elderly. The combination of DC/TMD clinical examination, functional assessment, screening questionnaires, and diagnostic imaging provides a comprehensive and accurate approach to assessing temporomandibular joint conditions in the elderly population.

The method used in this literature review is: Literature Review: The author collected and analyzed various recent scientific journals (published in the last 5 years) that are relevant

to the diagnosis, clinical symptoms, etiology, classification, and therapy of Bell's Palsy. Scientific Reference Sources: The literature used comes from international journals such as Cureus, American Family Physician, Journal of Audiology and Otology, and Journal of the Canadian Dental Association. Thematic Approach: The material is arranged based on the main topics related to Temporomandibular disorders in elderly patients such as: etiopathology, differential diagnosis, pharmacological and non-pharmacological management, and dental implications

RESULTS AND DISCUSSION

Result

Table 1. Results of Literature Study

NO	AUTHOR (YEAR)	METHOD	RESULT
1	Damla Soydan Cabuk & Hazal Duyan Yüksel (2023)	This study used a retrospective design with a radiological approach. Subjects were elderly patients undergoing cone beam computed tomography (CBCT) examinations covering the TMJ area.	The results of the study showed that age had an effect on some findings of TMJ osteoarthritis, but there were no significant differences based on gender.
2	Manolya Ilhanli & Ilker Ilhanli (2023)	This study is a retrospective study evaluating temporomandibular joint (TMJ) involvement in rheumatoid arthritis (RA) patients using magnetic resonance imaging (MRI).	showed that TMJ involvement was found in the majority of RA patients, namely 77%. In the EORA group, 60% of patients experienced TMJ involvement, while in the YORA group it was 80.6%. Although numerically TMJ involvement was higher in the YORA group, the difference was not statistically significant. Patients with TMJ involvement were significantly more than those without TMJ involvement in both age groups. Furthermore, no significant differences were found between EORA and YORA regarding disease activity, clinical characteristics, or most TMJ MRI findings.
3	Ayant Prakash, Kumar Ranvijay, Lairenjam S. Devi, Mahesh Shenoy, Nishath S. Abdul Ganiga C. Shivakumar, and Prashant Gupta (2022)	structured questionnaire and direct clinical examination to assess symptoms of temporomandibular disorders (TMD) such as TMJ pain, limited mouth opening, joint sounds, and signs and symptoms of bruxism, with excellent examiner reliability (kappa value >0.9).	The prevalence of TMD symptoms was relatively low, with TMJ pain in 10.5%, difficulty opening the mouth in 11.2%, and TMJ joint noise in 14%, while bruxism was found in 17% of subjects. TMD and bruxism symptoms were more common in women than in men.
4	Peter Heidemann et al	standardized TMJ/TMD questionnaire completion, structured anamnesis, and evaluation of orthopedic and stomatological findings.	The results showed that 90.3% of respondents were female with an average age of 52.87 ± 16.14 years, and based on occupation, 29% worked as office workers and 19.4% were retired. Clinically, 54.8% of respondents experienced involvement of both TMJ joints, and 22.6% experienced daily pain without pain-



			free periods, while subjective complaints of hearing loss were not found.
5	Bozdemir, Görmez, and Sırlı Yılmaztürk (2024)	cross-sectional design involving 700 respondents (350 elderly ≥ 65 years and 350 non-elderly) who were examined using questionnaires, intraoral–extraoral examinations, and panoramic radiography.	showed that 85.1% of elderly people had systemic diseases, and the most common extraoral complaints in elderly people were temporomandibular joint pain and noises (42.4%). Radiographically, 39.7% of elderly people showed degenerative changes in the TMJ, higher than non-elderly people.
6	Aditi Ava Rath, MDS and Loknath Sahoo, MS (2024)	linear review (literature review) The authors conducted an electronic literature search through PubMed, cross-references, and related textbooks. Keywords included “elderly, TMJ, dislocation, reduction, treatment, preventive care.” Inclusion criteria: publications from 2010–2023, subjects aged ≥ 60 years. Of the 72 publications, 42 articles were selected and analyzed, with a focus on cohort studies and case series.	TMJ dislocation in the elderly is more often chronic/habitual than acute, with a predominance in women. Chronic dislocation significantly impacts quality of life (chewing, speaking, swallowing, and breathing). Predisposing factors include ligamentous laxity, Parkinson's, Huntington's, Ehlers-Danlos, Marfan syndrome, epilepsy, muscular dystrophy, edentulous conditions, and the use of certain medications. Primary treatment begins with conservative manual reduction, followed by minimally invasive methods or surgery if necessary. Preventing recurrence is crucial through preventive therapy and post-reduction care.
7	Angelika Rauch et al. (2023),	A cross-sectional observational study of 191 German elderly (≥ 60 years) using the PHQ questionnaire, clinical examination, and RDC/TMD criteria.	Most older adults don't experience TMD. TMD is primarily a joint disorder (not a muscle disorder). Bruxism is quite common, especially in the very elderly.
8	Kulesa-Mrowiecka et al (2025)	Systematic review of 16 studies on total temporomandibular joint (TMJ) replacement, with assessment of risk of bias (ROBINS-I) and quality of evidence (GRADE).	Systematic review of 16 studies on total temporomandibular joint (TMJ) replacement, with assessment of risk of bias (ROBINS-I) and quality of evidence (GRADE).
9	Yeon-Hee Lee, Seonggwang Jeon, Tae-Seok Kim, Hee-Sung Kim, Q-Schick Auh, and Yung-Kyun Noh.(2026)	A cross-sectional study of 4,661 TMD patients aged 7–113 years, stratified by age, including the elderly (65–84 years) and the super-elderly (≥ 85 years). TMD diagnosis was established using the DC/TMD Axis I, with assessment of pain (VAS), mouth opening, chief complaint, and TMD subtype. Analysis was performed using descriptive statistical tests, ANOVA, correlation, generalized linear model (GLM) and LASSO.	Elderly and super-elderly individuals exhibit higher TMD pain intensity and smaller maximum mouth openings than younger individuals. The most common TMD subtype is arthralgia in the elderly, while degenerative joint disease is most common in the super-elderly. The factors most associated with increased pain are TMJ pain, TMJ sounds, age, and decreased mouth opening.



Discussion

Temporomandibular disorder (TMD) has a high prevalence across all age groups, although some studies report a lower prevalence in the elderly. Temporomandibular joint osteoarthritis (TMJ OA) is part of the TMD spectrum and is difficult to diagnose through clinical examination alone, necessitating more objective imaging methods. Cone-Beam Computed Tomography (CBCT) is considered a reliable method for evaluating TMJ degenerative changes because it can display bone changes in detail with a relatively low radiation dose. TMJ OA is an age-related degenerative disease characterized by radiographic findings such as erosion, osteophytes, flattening, and subchondral sclerosis. The results showed that changes such as erosion, flattening, and sclerosis were more common in the elderly group, with no significant differences based on gender. The differences in results with other studies are likely influenced by variations in the population and research methods, and indicate the need for further studies with a larger number of elderly subjects to more comprehensively identify the stages of TMJ osteoarthritis (Cabuk, 2023). Furthermore, advanced diagnostic techniques such as magnetic resonance imaging and arthroscopy are increasingly employed to visualize disc displacement and perforation, which are frequently associated with the progression to osteoarthrosis (Delpachitra & Dimitroulis, 2021; Gupta et al., 2025; Xu et al., 2023; Zhao et al., 2025).

Temporomandibular joint dysfunction is more common in women, those aged 43–53, and those with office jobs. The high frequency of pain indicates a serious condition and emphasizes the need for effective physiotherapy planning. However, the small sample size is a limitation of this study (Heidemann et al., nd). Consequently, future research should incorporate larger cohorts to validate these findings and provide more robust statistical power (Saddu, 2015). Further investigation into the underlying pathophysiological mechanisms contributing to the observed demographic prevalence patterns, such as hormonal influences in women or ergonomic factors in office settings, could offer valuable insights for targeted interventions (Hincapié et al., 2024; Liu et al., 2020; Overstreet et al., 2023). The intricate relationship between craniocervical posture and TMD also warrants further exploration, as anterior head positioning and alterations in the craniocervical angle have been implicated in various craniofacial pain conditions and suboccipital space reduction, though research findings remain varied (Chen et al., 2025; Dipalma et al., 2025; Kui et al., 2024).

Epidemiological literature indicates that oral health in older adults remains a concern and is strongly influenced by access to healthcare, socioeconomic conditions, and awareness levels, particularly in developing countries like India. This study found a relatively low prevalence of TMD symptoms and bruxism in older adults, with TMD symptoms around 10.5–14% and bruxism around 17%, consistent with international studies in older populations. TMD symptoms tended to be slightly more common in women, but the difference was not statistically significant, and the 70–80 age group showed lower symptoms than the 60–70 age group. There was a significant association between bruxism and TMD symptoms, with individuals with bruxism having a significantly higher risk of developing TMD, with an odds ratio of 8 in those aged 60–70 and 15.1 in those aged 70–80. These findings support the idea that although TMD prevalence decreases with age, bruxism is a strong risk factor for the development of TMD symptoms in older adults. However, further longitudinal research is needed to strengthen the causal relationship and understand the multifactorial etiology of TMD (Prakash et al., 2022). The observed associations between craniocervical dysfunction and TMDs further highlight the complexity of these conditions, suggesting that therapeutic interventions should consider the



interplay between these systems to prevent relapse of occlusal and TMD symptoms (Dipalma et al., 2025; Ferrillo, 2023; Paço et al., 2021; Serritella et al., 2022; Yap et al., 2024).

Elderly patients require a more comprehensive oral examination than non-elderly patients due to the higher prevalence of systemic disease (85.1%), medication use/polypharmacy (79.1%), and suboptimal oral hygiene. Elderly patients exhibit higher rates of tooth loss, denture use, dry mouth (62.6%), and oral mucosal lesions (82.6%), with tongue lesions being the most common finding. Edentulism is more common in elderly patients (14.6%) than in non-elderly patients and is associated with decreased chewing function and quality of life. Radiographically, elderly patients more often exhibit degenerative changes of the temporomandibular joint (TMJ) (39.7%), although clinical symptoms of TMD are relatively minimal, with pain and joint noises being the main findings. Furthermore, periapical radiolucency, retained roots, and other oral factors are potentially associated with systemic disease, particularly cardiovascular disease. These findings emphasize the importance of a multidisciplinary approach, panoramic radiographic examination, and understanding the relationship between oral and systemic health in the care of elderly patients. (Bozdemir, 2024) Top of Form Bottom of Form Top of Form Temporomandibular joint dysfunction is more common in women, those aged 43–53, and those with office jobs. The high frequency of pain indicates a serious condition and emphasizes the need for effective physiotherapy planning. However, the small sample size is a limitation of this study (Onan et al., 2025; Qin et al., 2024a, 2024b; Shousha et al., 2021).

Temporomandibular joint dislocations in the elderly are more often recurrent than acute, with the majority of cases occurring in women, which is associated with postmenopausal hormonal changes. The recommended initial treatment is manual reduction, including various conservative techniques, especially in patients with neurological conditions such as Parkinson's disease, epilepsy, or seizure disorders. However, immediate reduction does not guarantee recurrence prevention. Botulinum toxin-A injection after manual reduction has been shown to be effective as a preventive method, although in elderly patients with neuromuscular disorders, higher doses are required. In cases of chronic or long-term dislocations unresponsive to conservative therapy, surgical procedures such as eminectomy, condylectomy, discectomy, or condylotomy are options, with high success rates, although outcomes are poorer in patients with dyskinesia. Overall, there is no single consensus for the management of long-standing TMJ dislocations in the elderly, and the choice of therapy should be tailored to the patient's systemic and medical conditions (Rath & Sahoo, 2024).

In the elderly group, only RDC/TMD with articular origin was diagnosed, while disorders with muscular origin were not found, and most respondents did not have a RDC/TMD diagnosis (83.2%). The prevalence of bruxism based on self-report was 24.7% and clinical signs was 28.8%, with clinical signs being more common in the very elderly group. These findings contrast with the general adult population, which is more likely to exhibit muscular TMD, and strengthen evidence that there is a shift from muscular to articular disorders with increasing age. The prevalence of TMJ disorders in the elderly is lower than in some general population studies, possibly due to the limited reliability of RDC/TMD in detecting joint sounds. The prevalence of bruxism in the elderly is comparable to studies in other countries, although interpretation of clinical signs may be influenced by physiological tooth wear and long-term denture wear. Limitations of the study include the small sample size and the lack of instrumental confirmation of bruxism. Therefore, further research with standardized methods and objective instruments is needed (Rauch et al., 2023).



Temporomandibular joint (TMJ) is a rare condition in the geriatric population. In a review by Omiunu et al. (1969–2020), only 7 of 93 cases were over 65 years of age. Infection typically spreads hematogenously or from surrounding tissues, with pain, trismus, and swelling as the primary symptoms, while systemic symptoms are relatively rare. *Staphylococcus aureus* is the most common pathogen, although approximately half of cultures show no growth, so diagnosis relies on history, clinical examination, laboratory tests, and imaging. Imaging modalities used include radiography, ultrasound, CT, and MRI; CT and MRI are superior for early detection and assessment of soft tissue and complications. Initial therapy consists of broad-spectrum antibiotics, with surgery if necessary. Early diagnosis and treatment are essential to prevent complications such as osteomyelitis and TMJ ankylosis. In reported cases, early diagnosis and rapid response to antibiotics allowed for uncomplicated recovery and no surgical intervention (Yasan, 2024).

CONCLUSION

Temporomandibular disorders in the elderly are multifactorial conditions influenced by the aging process, systemic diseases, long-term medication use, dental and oral conditions, and degenerative changes in the temporomandibular joint. Epidemiologically, the prevalence of TMD symptoms in the elderly tends to be lower than in younger age groups, especially for disorders originating from the muscles. However, disorders with articular origin and degenerative changes in the TMJ actually increase with age and are often detected radiologically even though clinical symptoms are minimal. Examination methods in the elderly must be comprehensive, including a thorough history, extraoral and intraoral clinical examinations, evaluation of parafunctional habits such as bruxism, and imaging examinations, with CBCT, CT, and MRI as the preferred modalities for assessing structural and soft tissue changes in the TMJ.

Older adults have a higher burden of oral health issues, including tooth loss, denture use, xerostomia, mucosal lesions, and periodontal disease, which can contribute to TMJ dysfunction. Furthermore, conditions such as recurrent TMJ dislocation and temporomandibular joint infections, although rare, are more common in older adults and require early diagnosis and treatment to prevent serious complications such as ankylosis and osteomyelitis. Management of TMD in older adults generally prioritizes conservative approaches, such as manual therapy, physiotherapy, and pharmacological interventions, while surgical intervention is considered in chronic or refractory cases.

With the increasing elderly population, more thorough and individualized TMJ examinations are needed, along with an interdisciplinary approach that considers the patient's systemic condition and quality of life. Further research with longitudinal designs, larger sample sizes, and the use of more objective diagnostic methods is needed to strengthen our understanding of the characteristics, progression, and management of temporomandibular disorders in the elderly population.

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