



PERCEPTION REGARDING TEMPOROMANDIBULAR DISORDERS AMONG DENTAL PRACTITIONERS IN SUDAN

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ABSTRACT **Background:** TMDs encompasses various clinical issues affecting the jaw muscles and temporomandibular joint, with diverse etiologies and presentations. Proper function of the TMJ, crucial for jaw movement, relies on coordinated muscle activity. TMD prevalence ranges widely, affecting 28% to 86% of the population. Diagnosing TMD poses challenges, influenced by practitioners' knowledge and attitudes. Understanding and managing TMD can mitigate the cycle of patient referrals, crucial for addressing chronic facial pain associated with TMD. **Objective:** To study the perception Regarding Temporomandibular Disorders among Dental practitioner in Sudan. **Methodology:** The methodology employed a descriptive cross-sectional design to evaluate dental practitioners' perceptions of Temporomandibular Disorders (TMD) in Sudan during 2023. The study encompassed both public and private dental clinics and hospitals, collecting data from March 25 to December 3, 2023. All actively practicing dental practitioners in Sudan were eligible, and a structured questionnaire assessed their knowledge, attitudes, and practices related to TMD. Ethical approval was obtained from the Al-Fajr College for Science and Technology ethics committee, ensuring adherence to ethical standards. Stratified sampling aimed for demographic representation, with statistical analysis conducted using SPSS software. **Results:** The study investigated demographic and professional traits of participants, revealing a predominantly female cohort (63.3%) with a notable proportion in general practice (38.9%) and dental internships (34.2%), indicating early career stages. Most reported less than 5 years of experience (63.6%). Nearly half lacked specialization (49.5%), with varied specializations including oral surgery (7.9%) and orthodontics (6.8%). Regarding TMD knowledge during education, over half had limited information (52.7%). Symptom assessment unveiled diverse presentations, including difficulty in mouth opening (13.0%) and preauricular pain (15.2%), emphasizing the multifaceted nature of TMD. Co-occurring symptoms and uncertainty were prevalent, necessitating tailored management strategies. **Conclusion:** Variations in dental professionals' views on the association between orthodontic treatment and TMDs, coupled with disparities in interpreting frequency tables and study outcomes, reveal a substantial knowledge gap. Improving TMD education and fostering interdisciplinary collaboration are crucial for standardized diagnostic practices and enhanced patient care.

KEYWORDS :

BACKGROUND:

According to the American Academy of Orofacial Pain, temporomandibular disorders (TMD) describe various clinical problems, characteristics symptoms, etiologies, and progressions involving the temporomandibular joint (TMJ), and its associated structures like masticatory muscles, nerves and vascular supply (1).

The temporomandibular joint is a synovial complex joint that allows wide range of movements in two compartments, gliding movement and rotary or hinge movement. Synchronization between these movements and its related structures is necessary to limit damage to surrounding tissues and optimize jaw function (2).

TMDs encompass various conditions that involve the masticatory muscles, temporomandibular joint, or both. These disorders are the most common orofacial pains of musculoskeletal origin, affecting anywhere from 28% to 86% of the population (3).

Signs and symptoms of TMD can be present in individuals of all ages, although symptoms increase with age. Some investigations conducted over 20 years have found mild signs and symptoms of TMD already present in childhood (4).

Diagnosing TMD is challenging and presents for many practitioners, so the knowledge, attitude, and experience of dental practitioners play

a role in how TMD is diagnosed and managed. Also knowledge and a positive attitude can help break the cycle of constant referrals of patients (5).

The prevalence of TMD varies among different populations. Higher prevalence rates have been reported among male university students in Riyadh Saudi Arabia, and university students in Brazil (6). On the other hand, lower rates of TMD have been estimated among Arab students at Gulf Medical University Ajman in the UAE and among Indian university students (7).

There have been few surveys conducted worldwide to assess the knowledge, attitude, and practice of dental practitioners regarding TMD, there are some initiative of survey was conducted to assess the knowledge, attitude, and practice of TMD specialists and general dental practitioners in India(8). Nevertheless, the cause of the signs and symptoms of TMDs is not clearly understood and various opinions on their etiology have been offered (9). The frequency of severe disorders that are accompanied by headaches and facial pain characterized by urgent need of treatment is 1% - 2% in children, about 5% in adolescents, and 5% - 12% in adults. A non-patient population has been reported prevalence rates vary broadly (from 26% to 50%) (10). Increasing the TMD knowledge level provide graduate dentists with the necessary practice and knowledge of TMD, and considerably help them in referring their patients to the right specialist for further diagnosis and interdisciplinary management of patients(11).

A study in Yemen estimated the prevalence of temporomandibular Joint disorders (TMDs), among dental university students showed 41.07 % of the studied sample had symptoms of TMD and some degree of dysfunction (12).

Furthermore, Soukaina Ryalat et al did a study to investigate the prevalence of temporomandibular disorder (TMD) among students of the University of Jordan, were at a significantly higher risk of developing clicking, whereas pain around the ears, joint locking, and trismus were more common among students in science colleges (13).

A study among adolescents and to contrast the prevalence of TMD according to the clinical examination protocol versus the prevalence of pain, prevalence of TMD is higher for girls than for boys and the prevalence of TMD was higher than the prevalence of pain The prevalence of TMD is higher for girls than for boys and the prevalence of TMD established according to the DC/TMD criteria was higher than the prevalence of pain related to TMD (14).

JUSTIFICATION:

Understanding the perceptions of Temporomandibular Disorders (TMD) among dental practitioners in Sudan is crucial for improving patient care and outcomes. By identifying any misconceptions or gaps in knowledge, appropriate educational interventions can be developed to enhance practitioners' understanding of TMD diagnosis and management, and provides valuable insights into the challenges faced in implementing standardized protocols and guidelines in Sudan.

OBJECTIVES:

GENERAL OBJECTIVE:

To study the perception Regarding Temporomandibular Disorders (TMD) among Dental practitioner in Sudan 2023

SPECIFIC OBJECTIVES

- To identify knowledge, diagnosis, and treatment of dental practitioners about TMDs.
- To Evaluate dental practitioners' perceptions about TMDs
- To determine the obstacles and difficulties that dental practitioners encounter in diagnosing and managing TMD.

METHODOLOGY

STUDY DESIGN:

A descriptive cross-sectional study design was chosen to assess the perceptions regarding Temporomandibular Disorders (TMD) among dental practitioners in Sudan, in 2023. This design allows for the examination of attitudes, practices, and knowledge of TMD among dental professionals at a specific point in time.

STUDY AREA:

The study was conducted exclusively among dental practitioners practicing in Sudan, encompassing both public and private dental clinics and hospitals within the region.

STUDY PERIOD:

Data collection occurred over a period from March 25, 2023, to December 3, 2023, ensuring adequate time for reaching out to and collecting data from a diverse range of dental practitioners in Sudan.

STUDY POPULATION:

The study population consisted of all dental practitioners actively practicing within Sudan during the study period, regardless of their years of experience or specialization.

INCLUSION CRITERIA:

All dental practitioners practicing in Sudan were eligible for inclusion in the study, irrespective of their age, gender, educational qualification, or years of experience.

STUDY VARIABLES:

The independent variables included age, educational qualification, gender, and years of experience of the dental practitioners. The dependent variable was their perception of TMD.

SAMPLE SIZE:

The sample size was determined using a random sampling technique, aiming to achieve an adequate representation of the population of dental practitioners in Sudan.

The sample size of the practitioner was calculated according to the

formula below:

Sampling size: $n = N * z^2 * p(1-p) / [(N * d^2) + z^2 * p(1-p)]$ Where, n =sample size

N = population size (5110) z = standard normal deviation at 95% confidence level (1.96) p = proportion in target population estimated to have a particular characteristic (0.5)

d = degree of accuracy or the accepted margin of error (0.05) Therefore the sample size will be:

$n = 5110 * (1.96)^2 * 0.5(1-0.5) / [(5110 * (0.05)^2) + [(1.96)^2 * 0.5(1-0.5)]] = 357$ practitioners

SAMPLING:

A stratified sampling technique was utilized to ensure that dental practitioners from different demographics and practice settings (e.g., public vs. private, urban vs. rural) were adequately represented in the study sample. A sampling schedule was developed to guide the selection of participants.

DATA COLLECTION TECHNIQUE:

Data were collected using a structured questionnaire by google forms, specifically designed to assess dental practitioners' knowledge, attitudes, and practices regarding TMD in 2023. The questionnaire was administered in person or electronically, depending on the preference of the participants. Statistical analysis of the collected data was performed using the Statistical Package for Social Sciences (SPSS) software version 26.0.

DATA COLLECTION TOOLS:

The data collection tool comprised a structured questionnaire with two main parts:

- Part I: Demographic information, including age, educational qualification, gender, and years of experience.
- Part II: A set of 15 closed-ended questions aimed at evaluating dental practitioners' knowledge, attitudes, and practices regarding TMD, with questions specifically tailored to the context of Sudan in 2023.

ETHICAL APPROVAL

The research project "Perception Regarding Temporomandibular Disorders among Dental Practitioners in Sudan, 2023" has obtained ethical approval from the Al-Fajr College for Science and Technology ethics committee.

This approval ensures that the research adheres to ethical standards and guidelines, safeguarding the rights and well-being of all participants involved in the study. The ethical considerations include informed consent, confidentiality, privacy, and minimizing potential risks to participants.

RESULTS:

A descriptive cross-sectional design to evaluate dental practitioners' perceptions of Temporomandibular Disorders (TMD) in Sudan during 2023. The study encompassed both public and private dental clinics and hospitals, collecting data from March 25 to December 3, 2023. The study investigated demographic and professional traits of participants. The study examined various demographic and professional characteristics of participants. It found that the majority of participants were female (63.3%), indicating a potential gender imbalance within the profession. Moreover, the highest proportion of participants were general practitioners (38.9%), with a significant number also in dental internships (34.2%). This indicated that many participants were early in their careers, with a focus on general practice or internship roles. Additionally, most participants reported having less than 5 years of experience (63.6%), highlighting the relatively early career stage of the majority.

In terms of who usually practicing TMDs management, nearly half of the participants had not yet specialized (49.5%), while others specialized in areas such as oral surgery (7.9%) and orthodontics (6.8%).

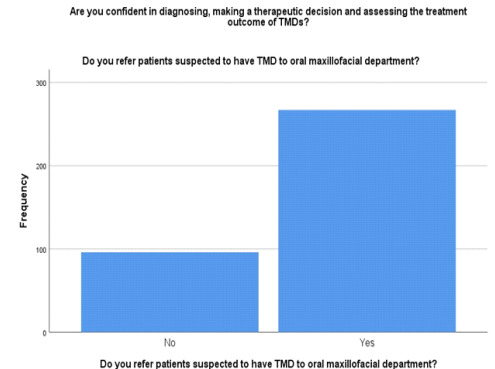
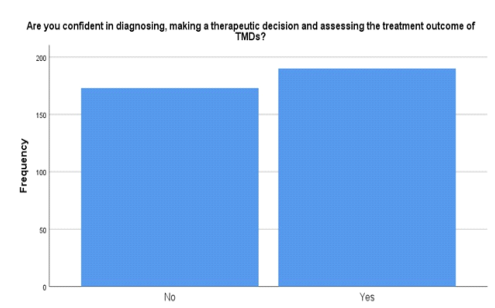
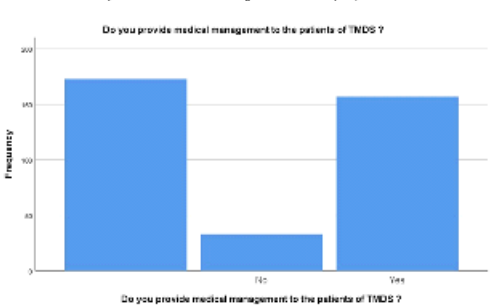
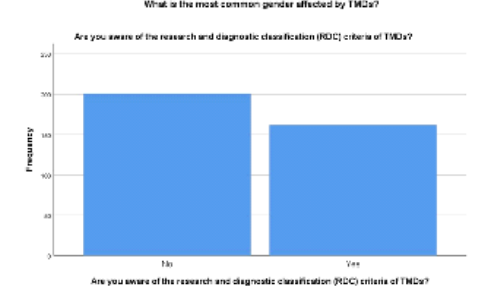
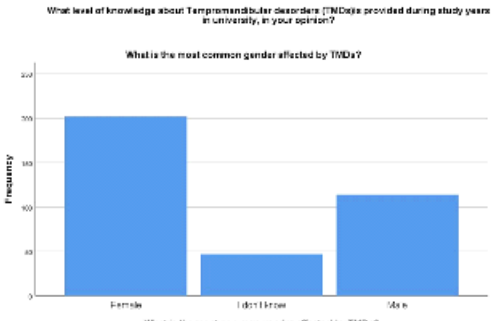
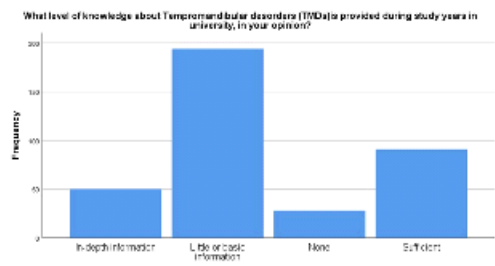
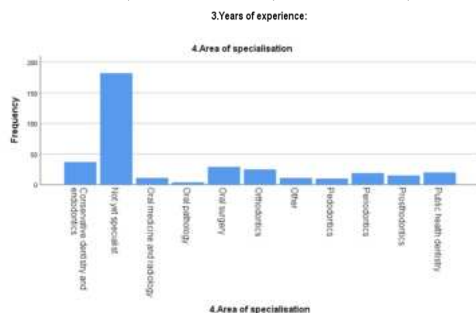
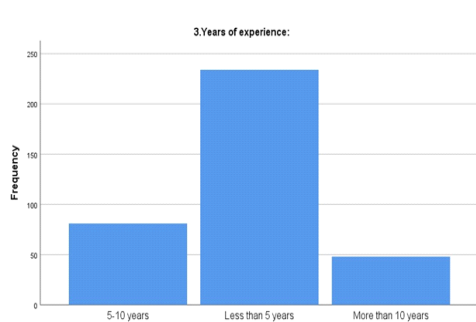
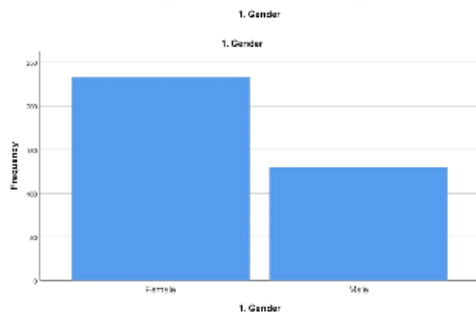
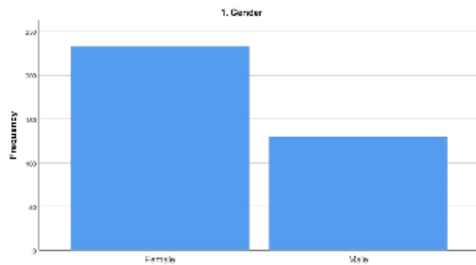
The study assessed participants knowledge of temporomandibular disorders (TMDs) during their study years. It found that over half of the

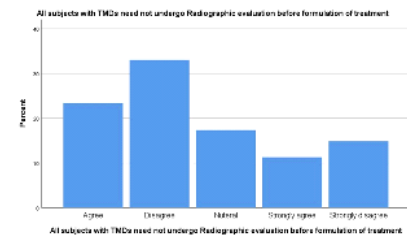
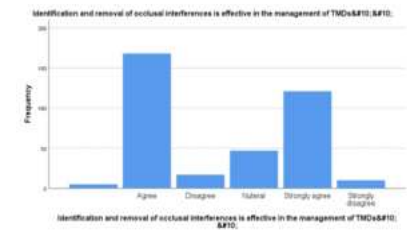
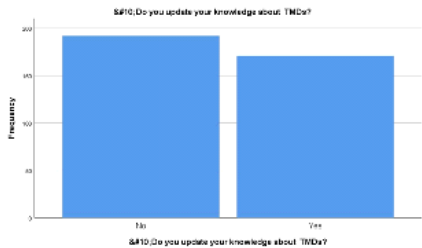
participants reported having little or basic information about TMDs during their education (52.7%).

The symptoms of temporomandibular disorder (TMD) were assessed, revealing a range of presentations: difficulty in mouth opening (13.0%), joint sounds (7.6%), muscle pain (4.9%), joint lock (4.3%), altered pathway of mouth opening (1.4%), and referred pain to the cervical region (1.4%). These symptoms often occurred in various combinations, such as difficulty in mouth opening with joint sounds and muscle pain (0.8%), joint lock with muscle pain (0.3%), and joint sounds with muscle pain and an altered pathway of mouth opening (0.3%). Additionally, a significant proportion of participants reported uncertainty about their symptoms (4.1%).

with pain in the preauricular region being the most prevalent complaint (15.2%). The complexity of symptomatology underscores the multifaceted nature of TMD, encompassing a spectrum of jaw dysfunction and associated discomfort patterns.

Regarding the demographic characteristics of individuals affected by TMDs, the study revealed that middle-aged individuals were the most commonly affected age group (42.4%), followed by young individuals (23.6%). Additionally, females were more commonly affected by TMDs than males (54.9% vs. 31.0%), indicating a potential gender difference in TMD prevalence. Furthermore, the study identified various etiological factors of TMDs, including trauma to the maxillofacial region (26.4%) and emotional stress (20.7%).





What constitutes the diagnostic criteria of myofascial pain?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dull regional pain	98	27.0	27.0	27.0
	I don't know	47	12.9	12.9	39.9
	Localized tenderness in firm bands of muscles	46	12.7	12.7	52.6
	Pain on palpation of three or more muscle sites(trigger points)	117	32.2	32.2	84.8
	Reduction in pain with local anesthetic injections into the muscles	18	5.0	5.0	89.8
	Sharp shooting pain	37	10.2	10.2	100.0
	Total	363	100.0	100.0	

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Clicking or pop	141	38.8	38.8	38.8
	Crepitus	56	15.4	15.4	54.3
	Elimination of joint sounds on protrusion	16	4.4	4.4	58.7
	I don't know	89	24.5	24.5	83.2
	Point of deviation altered by varying the speed of mouth opening	29	8.0	8.0	91.2
	Reproducible joint sounds	32	8.8	8.8	100.0
	Total	363	100.0	100.0	

What are the diagnostic signs which may lead to the clinical diagnosis of osteoarthritis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Clicking	49	13.5	13.5	13.5
	Crepitus	57	15.7	15.7	29.2
	I don't know	65	17.9	17.9	47.1
	Joint pain on lateral palpation	24	6.6	6.6	53.7
	Pain increasing on movement of the joint	140	38.6	38.6	92.3
	Painless joint movements	17	4.7	4.7	97.0
	Soft end feel	11	3.0	3.0	100.0
	Total	363	100.0	100.0	

What is best technique for bony pathology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.opg	1	.3	.3	.3
	Arthroscopy	40	11.0	11.0	11.3
	CBCT (Cone beam computed tomography)	1	.3	.3	11.6
	Computerized tomography scanning (CT)	159	43.8	43.8	55.4
	DEXA scan	4	1.1	1.1	56.5
	I don't know	40	11.0	11.0	67.5
	Magnetic resonant imaging (MRI)	74	20.4	20.4	87.9
	Regular dental X-rays	44	12.1	12.1	100.0
	Total	363	100.0	100.0	

What is best technique for joint space pathology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Arthroscopy	52	14.3	14.3	14.3
	Computerized tomography scanning (CT).	63	17.4	17.4	31.7
	I don't know	38	10.5	10.5	42.1
	Magnetic resonant imaging (MRI).	183	50.4	50.4	92.6
	Regula dental X-r rays	27	7.4	7.4	100.0
	Total	363	100.0	100.0	

What group aging most common affected by TMDs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I don't know	29	8.0	8.0	8.0
	Middle age individuals	156	43.0	43.0	51.0
	Old individuals	91	25.1	25.1	76.0
	Young individuals	87	24.0	24.0	100.0
	Total	363	100.0	100.0	

Which of the following is the most common etiology factors of TMDs

		Frequency	Percent	Valid Percent	Cumulative Percent

Valid	All of the above can be cause	1	.3	.3	.3
	Associated with other musculoskeletal disorders	15	4.1	4.1	4.4
	Bruxism	60	16.5	16.5	20.9
	Emotional stress	76	20.9	20.9	41.9
	Genetics	11	3.0	3.0	44.9
	I don't know	16	4.4	4.4	49.3
	Malocclusion	60	16.5	16.5	65.8
	Mouth breathing	15	4.1	4.1	70.0
	Trauma from hyperextension	12	3.3	3.3	73.3
	Trauma to maxillofacial region	97	26.7	26.7	100.0
	Total	363	100.0	100.0	

DISCUSSION

The study examined various demographic and professional characteristics of participants. It found that the majority of participants were female (63.3%), indicating a potential gender imbalance within the profession it the same all over the word female outnumbered male in dental school (15).

Moreover, the highest proportion of participants were general practitioners (38.9%), with a significant number also in dental internships (34.2%). This indicated that many participants were early in their careers, with a focus on general practice or internship roles. Additionally, most participants reported having less than 5 years of experience (63.6%), highlighting the relatively early career stage of the majority.

In terms of who usually practice TMDs management, nearly half of the participants had not yet specialized (49.5%), while others specialized in areas such as oral surgery (7.9%), orthodontics (6.8%). The same practitioner distribution is found in united state 2021 data showed 80% of practicing dentists are general practitioners and 20% are specialist breakdown as 10000 orthodontis,7500 oral and Maxillofacial Surgeons, 7000 Pediatric dentist 5500 Endodontists, 4500 Periodontists, 3500 Prosthodontist (16).

Furthermore, the study assessed participants knowledge of TMDs during their study years. It found that over half of the participants reported having little or basic information about TMDs during their education (52.7%), indicating a potential gap in dental education regarding this result similar findings presented by Magdalena Osiewicz et al. highlighted a significant knowledge gap among dental professionals regarding TMDs (17).

The symptoms of TMDs were assessed, revealed a range of presentations: difficulty in mouth opening (13.0%), joint sounds (7.6%), muscle pain (4.9%), joint lock (4.3%), altered pathway of mouth opening (1.4%), and referred pain to the cervical region (1.4%). These symptoms often occurred in various combinations, with pain in the preauricular region being the most prevalent complaint (15.2%). The same symptoms of TMDs described by Schiffman TMDs can presented with pain in the temporomandibular joint or muscles of mastication, clicking, popping, or crepitus of the joint on any of its movements or locking of the joint, headache limited to the temporal region and otalgia or tinnitus (18).

Regarding the demographic characteristics of individuals affected by TMDs, the study found that middle-aged individuals were the most commonly affected age group (42.4%), followed by young individuals (23.6%). Additionally, females were more commonly affected by TMDs than males (54.9% vs. 31.0%), indicating a potential gender difference in TMDs are most commonly reported in young adults, particularly between the ages of 20 and 40. This group experiences a higher prevalence due to factors such as stress, increased likelihood of bruxism (teeth grinding), and possibly higher levels of physical activity. Middle-aged individuals may experience TMDs due to the cumulative effects of chronic stress, joint degeneration, and changes in bite due to tooth loss or other dental issues. Similar studies showed

women are generally more affected by TMDs than men, especially during their reproductive years (20-50 years). This may be related to hormonal fluctuations, particularly estrogen, which can affect joint function (19).

This study identified various etiological factors of TMDs, including trauma to the maxillofacial region (26.4%) and emotional stress (20.7%) Manfredini, D., et al. manifested wide range of etiological factors like jaw trauma, inflammation, or muscle overuse, bruxism, often related to stress or anxiety, can lead to excessive wear and tear on the TMJ and surrounding muscles, habits such as gum chewing, nail-biting, or chewing on one side of the mouth can overwork the masticatory muscles, psychological factors may also exacerbate the perception of pain, genetic and hormonal factors (20).

Furthermore, the study elucidated the co-occurrence of symptoms, revealing intricate combinations such as difficulty in mouth opening with joint sounds and muscle pain (0.8%), joint lock with muscle pain (0.3%), and joint sounds with muscle pain and an altered pathway of mouth opening (0.3%). Additionally, a significant proportion of participants reported uncertainty about their symptoms (4.1%), the same finding are stated by Gauer and Semidey that patients with both TMJ lock and muscle pain often experience a combination of restricted jaw movement, joint noise, and diffuse muscle soreness (21). These findings highlight the heterogeneous nature of TMD presentations, with overlapping symptomatology requiring comprehensive assessment and management strategies tailored to individual needs.

RECOMMENDATION:

Improve knowledge about TMDs by emphases on introducing special dose in the curricula Involve the development of evidence-based guidelines for TMD diagnosis and management that are endorsed by professional organizations, along with the integration of TMD-specific training modules into dental education programs.

CONCLUSION

In conclusion, this study and findings from various studies collectively highlight a significant knowledge gap and variability in understanding TMDs within the dental community. So it is importance to enhancing TMD education among dental professionals and encourage interdisciplinary approaches are for standardizing TMD education and diagnostic practices, ultimately lead to high awareness and perception among practitioners to reach better outcomes for patients with TMDs.

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