




Assessment of Knowledge and Self-Awareness about Temporomandibular Joint Disorders among Dental Students

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Abstract

Objectives This study aimed to find the relationship between lack of knowledge and self-awareness about temporomandibular disorders (TMDs) and their signs and symptoms among dental students of College of Dentistry, Jazan University, Jazan, KSA.

Materials and Methods A self-administered structured questionnaire was used to assess the demographic variables, information regarding self-awareness and knowledge about TMDs among dental students. The data obtained were subjected to statistical analysis using the IBM SPSS version 20.0 software.

Statistical Analysis The data obtained were subjected to statistical analysis using the IBM SPSS version 20.0 software. Descriptive statistics, that is, frequencies and percentages were computed. The comparative analysis was done using Chi-square statistical analysis.

Results Out of 406 participants, 44.08% were male and 55.91% were female. Also, 329 were undergraduate students and 77 were interns. Almost a similar percentage of undergraduates and interns were suffering with trismus, articular sounds, pain, and arthralgia. Interns had more incidence of injuries of the head and neck, and had undergone orthodontic treatment, with a significant difference statistically ($p < 0.05$). A significant relation ($p < 0.05$) was observed between responses, with interns having better knowledge regarding investigations and treatment interventions.

Conclusion A direct relationship exists between the level of knowledge about temporomandibular joint (TMJ) and TMDs and self-awareness of its signs and symptoms. A thorough knowledge is required among the students to investigate, diagnose, and treat TMDs at early stages.

Keywords

- ▶ temporomandibular disorders
- ▶ knowledge
- ▶ self-awareness
- ▶ undergraduates

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Introduction

The temporomandibular joint (TMJ) complex is a part of the musculoskeletal system comprising different components, that is, bone, cartilage, ligaments, muscles and associated neurovascular channels supplying to the structures. It helps to perform various mandibular functions such as phonation, mastication, and deglutition.¹

The disorders arising from TMJ and its related structures are complex in nature with varied symptoms such as the displacement of the articular disc, articular sounds, pain originating from the bone and muscles, and degenerative changes to bony components.² Various etiological factors such as postural, structural, and psychological factors combine together, leading to TMDs. These disorders are caused due to the derangement of the functional balance between the three elements of the stomatognathic system, that is, TMJ, dental occlusion, and masticatory muscles.³

Since long, TMDs is an enigmatic issue and have been widely studied because of its multifactorial etiology. Patients reporting with complaint of TMDs symptoms are very rare. This could be due to a complete absence of symptoms, confusion, patient's ignorance, disability, excuses, and lack of knowledge and awareness.⁴ Thus, the complex nature of TMDs and their varied symptoms; and subjectivity in recording the condition poses issues in its evaluation.

Various studies⁵⁻⁷ have been conducted on medical and dental undergraduates or postgraduates, evaluating the prevalence of TMDs in them, as they are subjected to a complex academic and clinical curriculum. We observed very limited studies being conducted on dental or medical students, especially those that belong to universities. Until now, we have not observed any study comparing undergraduates and interns. So we took and compared these two groups of students primarily affected with stress during their course.

We preferred to conduct the study on dental students, as they are being taught about the TMDs and their signs and symptoms, so they could have been more enthusiastic in participating and responding to the study. Thus, the present study was conducted to find the relationship between lack of knowledge and self-awareness about TMDs and their signs and symptoms among dental students of College of Dentistry, Jazan University, Jazan, KSA.

Materials and Methods

The present cross-sectional study was a questionnaire-based study conducted from November 2020 to February 2021. The self-administered structured questionnaire was used to assess the demographic variables, information regarding the knowledge about TMDs, and self-awareness among dental university students. The validity of questionnaire was assessed by consulting the staff of other departments and was found to be appropriate ($\alpha = 0.85$). The study was conducted in accordance with the Declaration of Helsinki and was approved by the local ethics committee of the institute (reference number CODJU-20151 on October 20, 2020).

Informed written consent was obtained from all subjects prior to their enrolment in this study. Then, two sets of questionnaires were distributed to each student to analyze their self-awareness and knowledge about TMDs.

Subjects who were on analgesics or on any other medications related to the head and neck pain or disorder were excluded from the study.

The demographic data were collected to analyze the impact of various demographic factors on the prevalence of TMDs among dental students. Besides demographic parameters, 20 well-constructed questions were framed and asked from dental undergraduate students and interns. The response to all these questions was recorded. Demographic characteristics such as gender distribution and year of their study were asked. Questions regarding the signs and symptoms of TMDs such as pain, trismus, articular sounds, previous history of TMDs, or any related treatment were recorded by asking questions with options of "Yes" or "No." Various factors determining the knowledge of students about TMDs were analyzed and compared among undergraduates and interns by asking questions with different options.

The data obtained were subjected to statistical analysis using the IBM SPSS version 20.0 software. Descriptive statistics, that is, frequencies and percentages were computed. The comparative analysis was done using chi-square statistical analysis.

Results

A total of 406 dental students were included in the study, out of which 44.08% were male and 55.91% were female. Also, 329 were undergraduate students and 77 were interns. An insignificant difference was observed statistically in relation to demographic parameters (► **Table 1**).

Signs and symptoms of temporomandibular joint disorders among students were evaluated and compared. Almost a similar percentage of undergraduates and interns were suffering with trismus, articular sounds, pain, and arthralgia. Interns had more incidences of injuries of the head and neck, and have undergone orthodontic treatment, with a significant difference statistically ($p < 0.05$) (► **Table 2**).

Questions regarding the knowledge-based assessment were asked and responses were compared among interns and undergraduates. It was observed that a significant relation ($p < 0.05$) was observed between responses, with interns having a better knowledge regarding investigations and treatment interventions (► **Table 3**).

Discussion

The prevalence of temporomandibular joint and muscle disorder (TMJD) is between 5 and 12%. A few studies reported a higher prevalence rate of 25 to 33%.⁸ In the Saudi Arabian general populations, the prevalence rate of TMD was reported to be 35%.⁹ The heterogeneity in the prevalence rates may be due to different populations, races, and the use of different assessment tools by researchers.¹⁰⁻¹²

Table 1 Distribution of study subjects according to study year

Demographic		Frequency	Percentage	Chi-square	p-Value
Gender	Male	179	44.08867	23.918	0.918
	Female	227	55.91133		
	Total	406	100		
Year	2nd	51	12.56158	25.001	1.341
	3rd	50	12.31527		
	4th	56	13.7931		
	5th	78	19.21182		
	6th	94	23.15271		
	Intern	77	18.96552		

Table 2 Distribution of study subjects according to the questionnaire regarding signs and symptoms of temporomandibular joint disorders

Questionnaire		Undergraduates (N = 329)		Interns (N = 77)		Statistical analysis	
		Frequency	Percentage	Frequency	Percentage	Chi square	p-Value
Do you have trismus (reduced mouth opening)?	Yes	7	2.12766	2	2.597403	3.887	0.87
	No	322	97.87234	75	97.4026		
Do you hear sound within your TMJ while opening or closing the jaw?	Yes	21	6.382979	9	11.68831	1.09	0.021*
	No	308	93.61702	68	88.31169		
Did you ever had pain in and around ear?	Yes	26	7.902736	4	5.194805	2.191	0.918
	No	303	92.09726	73	94.80519		
Do you have pain on chewing?	Yes	23	6.990881	1	1.298701	2.718	0.012*
	No	306	93.00912	76	98.7013		
Do you have pain on opening the mouth wide or during yawning?	Yes	9	2.735562	3	3.896104	11.817	1.78
	No	320	97.26444	74	96.1039		
Have you ever had lock jaw? If yes, how many times a year?	Yes	10	3.039514	1	1.298701	7.615	0.89
	No	319	96.96049	76	98.7013		
Have you ever had injury to your jaw, head or neck?	Yes	22	6.68693	1	1.298701	12.017	0.034*
	No	307	93.31307	76	98.7013		
Have you undergone orthodontic treatment before?	YES	73	22.18845	7	1.298701	10.715	0.002*
	No	256	77.81155	70	98.7013		
Do you have arthralgia in other joints of your body?	Yes	11	3.343465	1	1.298701	6.92	0.091
	No	318	96.65653	76	98.7013		
Have you ever taken treatment for TMDs?	Yes	14	4.255319	1	1.298701	5.761	0.05*
	No	315	95.74468	76	98.7013		

*p-Value < 0.05 is significant.

Table 3 Distribution of study subjects according to the questionnaire for knowledge-based assessment

Questionnaire		Undergraduates x0028; N = 329)		Interns (N = 77)		Statistical analysis	
		Frequency	Percentage	Frequency	Percentage	Chi square	p-Value
TMJ is a type of	Fibrous joint	26	7.902736	10	12.98701	12.0018	0.023*
1.	Hinge joint	42	12.76596	14	18.18182		
1.	Ball and socket joint	64	19.45289	23	29.87013		
1.	Diarthrodial joint	197	59.87842	30	38.96104		
Trismus is due to the inflammation of	Facial nerve irritation	21	6.382979	2	2.597403	11.615	0.056
1.	Lateral pterygoid	119	36.17021	25	32.46753		
1.	Medial pterygoid	134	40.72948	41	53.24675		
1.	Temporalis	55	16.71733	9	11.68831		
The most common cause of TMJ dislocation is	Smaller articular eminence	50	15.19757	7	9.090909	8.761	0.021*
1.	Reduced freeway space	17	5.167173	2	2.597403		
1.	Spasm of muscles of mastication	218	66.2614	59	76.62338		
1.	Thin articular disc	44	13.37386	9	11.68831		
Which one of the following is not a feature of TMJ dislocation?	Anterior open bite	54	16.41337	14	18.18182	12.001	0.031*
1.	Anterior displacement of condyle	31	9.422492	12	15.58442		
1.	Deafness	211	64.13374	42	54.54545		
1.	Can be reduced by applying pressure on mandible	33	10.0304	9	11.68831		
Dislocation is treated by forcing the mandible	Upward and forward	83	25.22796	6	7.792208	31.810	0.002*
1.	Upward and backward	75	22.79635	17	22.07792		
1.	Downward and forward	59	17.93313	19	24.67532		
1.	Downward and backward	112	34.04255	35	45.45455		
Hydrocortisone acetate is injected into painful arthritic TMJ to	Lubricate synovial joint	59	17.93313	9	11.68831	11.413	0.021*
1.	Increase blood supply to the TMJ	42	12.76596	9	11.68831		
1.	Decrease the inflammatory response	185	56.231	53	68.83117		
1.	Anesthetize the nerve supply of TMJ	43	13.06991	6	7.792208		
Which of the following is not a normal feature of TMJ?	Pain while opening the mouth	183	55.6231	59	76.62338	21.241	0.012*
1.	Joint sound	58	17.62918	3	3.896104		
1.	Deviation of the mouth to the opposite side while opening the mouth is eccentric movements	43	13.06991	8	10.38961		
1.	Bilateral synchronous movements	45	13.67781	7	9.090909		
Which one of the following is the most common type of articular disc displacement?	Anterior and lateral	90	27.35562	19	24.67532	9.991	0.045*

Table 3 (Continued)

Questionnaire		Undergraduates x0028; N = 329)		Interns (N = 77)		Statistical analysis	
		Frequency	Percentage	Frequency	Percentage	Chi square	p-Value
1.	Anterior and medial	107	32.5228	19	24.67532		
1.	Posterior and lateral	97	29.48328	21	27.27273		
1.	Posterior and medial	35	10.6383	18	23.37662		
The most commonly prescribed medicine for TMDs	Opioid analgesics	23	6.990881	10	12.98701	10.016	0.024*
1.	Antihistaminic	8	2.431611	2	2.597403		
1.	Diazepam	26	7.902736	7	9.090909		
1.	NSAID	272	82.67477	58	75.32468		
1.	NSAID	272	82.67477	58	75.32468		
The best imaging modality for articular disc derangement is	Transpharyngeal radiograph	6	1.823708	3	3.896104	7.779	0.034*
	MRI	209	63.52584	62	80.51948		
	CT scan	91	27.65957	7	9.090909		
	Arthroscopy	23	6.990881	5	6.493506		

Abbreviations: CT, computed tomography; NSAID, nonsteroidal anti-inflammatory drug; MRI, magnetic resonance imaging; *p-Value < 0.05 is significant.

Due to the demanding nature of the study patterns in universities of Saudi Arabia and complex dental curriculum, the present study was done to assess the self-awareness and knowledge of students about TMJ disorders using the self-reported questionnaire-based survey. The questionnaire used had a collection of good information in a relative period of time with better understanding and minimal cost.

In the present study, we observed that more than 90% of undergraduates and interns suffered from symptoms of TMJ disorders. Srivastava et al⁵ conducted a study on dental undergraduates and reported a TMD prevalence of 36.99%. However, the higher prevalence of TMD has been reported in earlier studies by Alkudhairi et al⁶ (38%), Habib et al⁷ (46.8%), and AlHussaini et al⁸ (62.8%) conducted on the population groups in Saudi Arabia.

In our study and other studies¹³⁻¹⁵ conducted in Saudi Arabia among dental students, the higher prevalence of TMD was observed among the students, being 1.65 times higher than students of other streams. This could be due to the fact that the dental students have theoretical and clinical knowledge about the TMDs as a part of their curriculum. Hence, they could identify and relate the signs and symptoms of TMD well. Various etiological factors related to TMDs are demanding such as the curriculum of university studies, patient care, inherent challenges, and apprehension about the career.⁵

We observed that undergraduates and interns both have similar incidences of pain, articular sounds, trismus, and lock jaw. As they both suffer from a similar level of stress of academic and clinical courses. Increased levels of anxiety and stress-related symptoms have been observed in TMD patients. This is common among university students as they undergo role transitions, being away from their family home, residing in hostels with other students, with lack of adult guidance, supervision, and care.^{16,17}

Similar to our study, Bonjardim et al¹⁸ reported that the common subjective symptoms observed were TMJ sounds (26.72%), headache (21.65%), tooth grinding (17.98%), and pain in the face or jaw regions (12.9%).

We also observed that more interns had undergone trauma to the head and neck areas and got their orthodontic treatment done in the past. However, still almost an equal percentage of undergraduates and interns suffered from TMD symptoms. Findings were in relation with the study by Egermark et al¹⁹ who concluded that patients who had undergone orthodontic treatment during childhood did not have a higher risk of developing signs or symptoms of TMDs later in life. They also stated that correlations between signs and symptoms of TMDs and different types of malocclusion are commonly weak or nonexistent.

Thus, psychological factors have an important role in causing TMDs. It has been observed that an increase in the level of knowledge about TMJ and TMDs among students increase the response rate and self-awareness about the identification of TMDs.

However, the conclusions and associations observed from our study should be carefully interpreted in the light of limitations of this study, such as a convenient sample size, use of a brief questionnaire, unequal distribution of student groups and genders. Although our study gives some information regarding the self-awareness and knowledge of TMDs among dental students of Jazan University, Saudi Arabia, long-term clinical studies should be conducted in the future to compare the students of different streams, institutes, and universities.

Conclusion

The present study showed a similar percentage of undergraduates and interns were suffering with trismus, articular sounds, pain, and arthralgia. Interns had better knowledge

regarding investigations and treatment interventions. A direct relationship exists between the level of knowledge about TMJ and TMDs and self-awareness of its signs and symptoms.

Conflict of Interest

None declared.

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