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KNOWLEDGE ABOUT TEMPOROMANDIBULAR JOINT DISORDERS AMONG DENTAL STUDENTS IN SAUDI ARABIA

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ABSTRACT

Background: TMDs are one of the most common reasons for pain and discomfort in the orofacial region including ears and forehead. They are multifactorial conditions which may be caused due to genetic factors, stress, or malocclusion.

Objectives: the aim of the present study was to assess the knowledge level of dental students and dental interns about TMJ disorders.

Subjects and methods: This cross-sectional study was conducted on a sample of 512 dental students; undergraduates (level 10, 11, and 12) and dental interns. Representative samples were collected from different governmental and private dental colleges in KSA. A questionnaire of 10 items was created on Google forms and distributed to the dental students.

Results: from the 10 knowledge questions only two questions were correctly recorded by more than 50% of the participants, there were no significant differences between private and governmental, male and female as well as among different academic levels for all questions regarding Knowledge about TMDs. Also, there were no association between knowledge level and gender or academic levels of the participants, but college type was positively associated with knowledge level of the students.

Conclusion: Knowledge level about TMDs was insufficient among undergraduates and dental intern students, and the mean knowledge score was roughly increased by increasing students' academic years. Also, college type governmental or private was significant associated with students' knowledge level.

KEYWORDS: Knowledge, Dental Students, Temporomandibular Joint Disorders

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INTRODUCTION

Temporomandibular joint disorders (TMDs) are defined as disorders that affect the temporomandibular joint (TMJ), the jaw muscles, or both. [1] Clinically, it appears in the masticatory muscles or TMJ as pain, tenderness, or clicking during condylar movement, or even it may restrict mandibular movement (restriction, deviation or deflection). [1]

TMDs symptoms can range from slight or sever symptoms; TMJ related pain affects the individual's daily activities, psychosocial functioning and quality of life. [2] Delayed diagnosis of TMDs occurs usually as a result of its multifactorial etiology, and the lack of assessment devices and parameters. [3]

Various techniques are used to assist in diagnosis of TMDs like; simple X-rays, Panoramic X-rays, Conventional and Computed Tomography (CT), Digital Volume Tomography, Arthrography, and Magnetic Resonance Imaging (MRI), and Cone Beam Computed Tomography (CBCT). [4]

Drugs used in TMDs treatment are; painkillers, non-steroidal anti-inflammatory drugs (NSAIDs), anticonvulsants (gabapentin), muscle relaxants, tricyclic amines, and tricyclic antidepressants (TCAs). NSAIDs are contraindicated in patients with gastrointestinal disorders or NSAID-sensitive asthma. [5]

Most of the studies conducted to assess prevalence of TMDs concluded common observation that females and younger age groups are the most affected categories by these disorders [6-9] Also several studies founded a higher TMDs prevalence among university students, especially medical and dental undergraduates. [10 - 13] Several studies investigated the incidence of TMDs and its related factors among kids, teenagers, adults and the elderly, but there is little knowledge available regarding colleges' dental students who are subject to a high psychosocial and physical manifestations of tension and anxiety.[14]

Dental students' knowledge level about TMDs should be satisfactory, in order to protect themselves and aid in patient diagnosis and management. Thus, the aim of the present study was to assess the knowledge level of dental students about TMJ disorders in Saudi Arabia.

SUBJECTS AND METHODS

This questionnaire based cross-sectional study was conducted on dental students in Saudi Arabia during the period from September, 2020 to May 2021. Several public and private dental colleges (Faculty of Dentistry at Imam Abdulrahman Bin Faisal University, Vision Colleges for Dentistry and Nursing in Al Riyadh and Jeddah, Ibn-Sina Dental College in Jeddah, Faculty of Dentistry at King Saud University).

Sample size and sampling technique

The required sample size was 357 students which was calculated from; total population size (N) 5000 with confidence level 95% and type 1 error (α) 0.05. Non-probability consecutive sampling technique was used to collect data from the participants. A total number of 512 dental students participated in this study (295 males and 217 females), regarding colleges types (259 students came from private dental colleges, and 253 students were from governmental dental colleges). According to the academic levels; 138, 114, 98, and 162 students were from levels 10, 11, 12 and dental interns respectively.

Questionnaire preparation

A questionnaire of 10 multiple choices questions was created on Google forms and distributed to the dental students. The questionnaire was validated and used in previous study[15]. (https://docs.google.com/forms/d/e/1FAIpQLScq3z1rOWPC-fxTeHMKPyqk8v3HrIvr1hFjdgc-mDaCzOn5tA/viewform?usp=pp_url). It contains questions related to; definition and normal features of TMJ, causes and symptoms of TMDs, direction of

articular disc displacement, role of hydrocortisone acetate in reliving TMJ arthritis, causes of trismus, management of mandibular dislocation, medication of TMDs, and methods of articular disc investigations. The participants were informed about the purpose of the study and the confidentiality of their data before filling in the questionnaire. Dental students from the previous mentioned levels who accepted to participate were involved in the study and those who refused were excluded.

Statistical analysis

Students' responses were saved in spreadsheets and downloaded from Google forms, then these data were analyzed using (IBM, SPSS version 20, IL, USA). P<0.05 was set as the level of significance. Descriptive analysis was conducted using frequency with percentage for nominal variables and mean with standard deviation for continuous variables. Knowledge score was calculated as the number of correct questions out of the 10 knowledge questions. Chi-square test was used to compare frequencies of correct answers among different genders, dental schools, and academic levels. Differences in mean knowledge scores across different variables was done using independent t-test for two means and One-way ANOVA to compare among more than two means. Linear regression analysis was used to analyze the association between knowledge and other variables in a multivariate environment and presented by β coefficients and 95% confidence interval (95%CI).

RESULTS

From the 10 knowledge questions only two questions were correctly recorded by more than 50% of the participants (77.1% and 68.6%) for questions # 8 and 10 respectively. There were no differences in knowledge level between private and governmental dental colleges, or between males and females as well as among different academic levels for all questions (Table 1 and Figure 1). The same results were found also in the comparison of the overall mean knowledge scores among the participants (Table 2).

The relationship between TMDs knowledge and other variables was further assessed in a multivariate environment (Table 3); gender and academic levels have not correlated to TMDs knowledge level (β: -0.002, 0.010, 95% CI: -0.067 to 0.065, -0.024 to 0.028 respectively), while college type (private or governmental) was significantly improved the students' TMDs knowledge level (β: 0.126, 95% CI: -0.136 to 0.008).

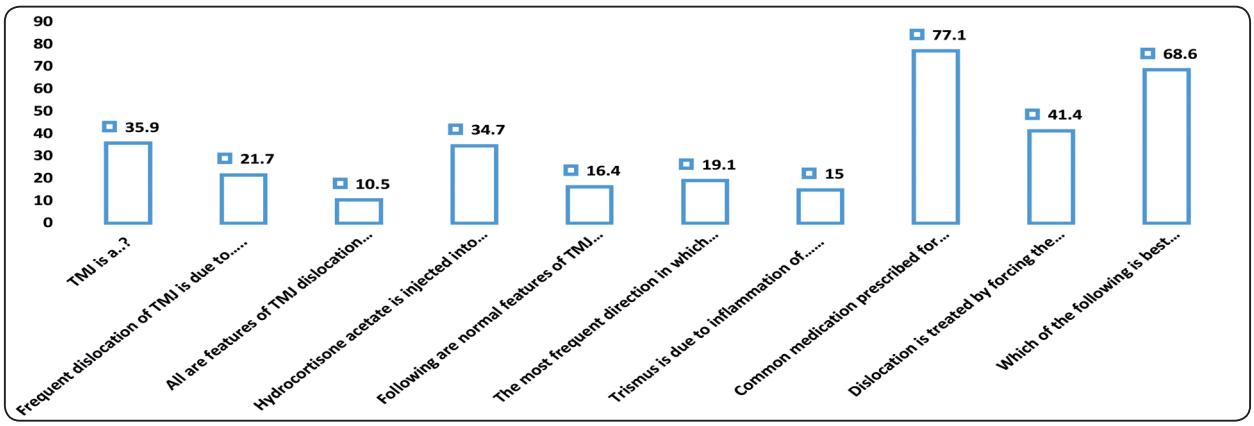

Fig. (1): Percentage of students correctly responded for each question

TABLE (1): Percentage of Dental Students Correctly Responded to The Knowledge Questions Regarding to Different Colleges, Gender and Academic level

Question	Correct answer	College			Gender			Academic level					Total (N=512)
		Private N (%)	Government N (%)	p	Male N (%)	Female N (%)	P	Level 10 N (%)	Level 11 N (%)	Level 12 N (%)	Dental interns N (%)	p	
TMJ is a……..	Diarthrodial joint /Ball and socket join	98 (37.8)	86 (33.8)	0.181	103 (34.9)	81 (37.2)	0.118	51 (36.9)	41 (36.0)	37 (37.5)	55 (33.9)	0.407	184 (35.9)
Frequent dislocation of TMJ is due to…..	Smaller size of articular eminence	60 (23.3)	51 (20.2)	0.868	69 (23.4)	42 (19.7)	0.268	22 (15.9)	29 (25.4)	20 (20.4)	40 (24.7)	0.618	111 (21.7)
All are features of TMJ dislocation except…….	Can be reduced by applying pressure on mandible	30 (11.6)	24 (9.4)	0.498	38 (12.8)	16 (7.4)	0.143	16 (11.6)	7 (6.1)	12 (12.2)	19 (11.7)	0.914	54 (10.5)
Hydrocortisone acetate is injected into painful arthritic TMJ to……	Decrease inflammatory response	91 (35.2)	87 (34.6)	0.967	109 (36.9)	69 (31.6)	0.774	38 (27.5)	35 (30.7)	31 (31.6)	74 (44.7)	0.151	178 (34.7)
Following are normal features of TMJ except	Bilateral synchronous movements	46 (17.7)	38 (15.0)	0.424	50 (16.9)	34 (15.7)	0.795	19 (13.8)	21 (18.4)	16 (16.3)	28 (17.3)	0.234	84 (16.4)
The most frequent direction in which articular disc gets displaced is…..	Anterior and medial	57 (22.0)	41 (16.2)	0.175	59 (20.0)	39 (17.9)	0.802	28 (20.3)	21 (18.4)	18 (18.4)	31 (19.1)	0.972	98 (19.1)
Trismus is due to inflammation of……	Lateral pterygoid	39 (15.1)	38 (15.0)	0.456	50 (17.3)	26 (12.0)	0.181	17 (12.3)	14 (12.3)	14 (14.2)	32 (19.8)	0.886	77 (15.0)
Common medication prescribed for TMDs is…….	NSAID	197 (76.1)	198 (78.3)	0.659	224 (75.9)	171 (78.8)	0.252	114 (82.6)	83 (72.8)	80 (81.6)	118 (72.8)	0.252	395 (77.1)
Dislocation is treated by forcing the mandible……	Downwards and backwards	104 (40.2)	108 (42.7)	0.776	128 (43.4)	84 (38.5)	0.186	63 (45.6)	57 (50.0)	30 (30.6)	62 (38.3)	0.234	212 (41.4)
Which of the following is best investigatory method for articular disc derangement?	MRI	184 (71.0)	167 (66.0)	0.447	204 (69.2)	147 (67.5)	0.761	104 (75.4)	78 (68.4)	61 (62.2)	108 (66.7)	0.459	351 (68.6)

N (%) = Number (percentage) , p= p value calculated with Chi Square Test.

TABLE (2): Comparison Between Mean Knowledge Scores Among Different Colleges, Gender and Academic Level.

Variables		Mean ± SD
College	Government	41.79 ± 45.45
	Private	43.75 ± 45.88
	P	0.229
Gender	Male	43.58 ± 45.68
	Female	41.47 ± 45.66
	P	0.213
Academic level	Level 10	42.43 ± 46.17
	Level 11	42.94 ± 45.58
	Level 12	41.49 ± 45.57
	Dental interns	43.55 ± 45.43
	P1	0.860

p= p value calculated with independent student t test and p1 was calculated with one-way ANOVA test. SD: standard deviation

TABLE (3): Linear Regression for TMDs Knowledge Among A Sample of Dental Students in Saudi Arabia (N=512)

Predictors	**Categories**	**β Coefficients**	**P-value**	**95.0% Confidence Interval for B**	
				Lower Bound	Upper Bound
College type	Governmental Private	0.126	0.027*	- 0.136	0.008
Gender	Males Females	-0.002	0.975	- 0.067	0.065
Academic levels	Level 10 Level 11 Level 12 Dental interns	0.010	0.865	-0.024	0.028

Dependent Variable: knowledge

****Significant Association at p<0.05***

DISCUSSION

TMDs was known as the most common cause of non-dental orofacial pain. It is the most challenging disease of modern society due to the variations present in their diagnosis, treatment and prognosis.[16] A higher number of TMDs specialists and GDPs do not have enough confidence in diagnosis and management of TMDs, this can be attributed to the knowledge acquired from TMDs curriculum during their undergraduate studying.[17]

The knowledge level among the participants regarding TMDs was not satisfactory as the percentage of participants who correctly responded to the knowledge questions was less than 50% for all questions except in two questions which were asking about the common medications prescribed for TMDs, and the best investigatory method for articular disc derangement (77.1 and 68.6 respectively). These results indicating insufficient knowledge about the anatomy of TMJ and the causes of TMDs while the knowledge focusing on treatment of symptoms.

Many studies have been conducted to assess the level of knowledge about TMDs among general dental practitioners (GDPs) and dental students, and there were inconsistencies in their results. As Baharv and et al, (2010)[18] found inadequate undergraduate dental education on TMDs and orofacial pain among their participants. Also, Patil et al (2016)[17] concluded that GDPs showed lower or fair knowledge level regarding TMDs in comparison to dental experts who participated in their study. In addition to them, Le Resche et al[19] reported law knowledge level regarding pathophysiology, diagnosis and treatment among GDPs when compared to TMDs specialists. However, Ashwin and Siri (2018)[20], found good knowledge level among their postgraduate participants, also López-Frías et al (2019)[5] found sufficient knowledge regarding etiology and diagnosis of TMDs in comparison to lower knowledge in management of

the same condition among their GDPs respondents. Oviya et al (2021) [21] mentioned that the knowledge level among their students was good.

Regarding academic levels; the mean knowledge level was nearly similar among different academic levels indicating no improvement in the student knowledge levels during studying their curriculum. Dental intern students showed the higher mean knowledge score (43.55); this slight improvement may be due to practicing dental work at different dental hospitals during their intern time and acquiring experience from their colleagues.

The current results indicated an association between dental students' knowledge level about TMDs and college type (governmental or private) with higher mean knowledge score in the private colleges than in the governmental ones (43.75 vs 41.79). This can be explained by the fact that private dental schools are more eager to communicate information to their students and continually following up them in order to improve the students' educational levels and gain a good academic reputation for attracting the possible largest number of students.

In Turkey (2015), a survey was conducted to assess dentists' knowledge about TMDs and possible treatment approaches. The results revealed insufficient knowledge level among them which was diminished with increased years of professional practice. [22] This trend was matched with our results as dental interns showed the higher mean knowledge score among all participants. Also, Mozhdeh et al (2020) [23] found decreased knowledge level with increasing the clinicians' experience among their participants. The difference between current results and other studies results can be explained by the proximity of the years of experience between our participants. However, for the other studies, there was a wide range of years of experience.

It was documented that, the clinicians loss their basic knowledge as they move away from their years of studying [23], this not evident in the present study but the knowledge level was less than the acceptable level and the slight improvement in the dental intern's knowledge suggests the importance of periodic updating in general dentistry knowledge, especially in the branch of TMDs as this helps clinicians to remember fundamental information acquired during their academic studies and continuously improve their practical experiences. This continuous knowledge updating will be translated into higher services' quality offered to their patients.

CONCLUSION

Knowledge level about TMDs was insufficient among undergraduates and dental intern students, and the mean knowledge score was roughly increased by increasing students' academic years. Also, college type whether governmental or private was significant associated with students' knowledge level.

RECOMMENDATIONS

1. The undergraduate dental curricula need to be improved to provide both theoretical and practical knowledge on diagnosis and management of TMDs.
2. Continuing dental education programs, Fellowships and Workshops on temporomandibular joints may aid in enhancing skills and knowledge of dental practitioners.
3. Further studies should be conducted in a larger scale areas and sample size to get a proper overview regarding this topic among the dental students.

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CONFLIC OF INTEREST

The authors declared that there is no conflict of interest

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