Prevalence of TMJ Disorders among Patients Attending the King Faisal University Dental Clinics, KSA

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Abstract

Aim: To assess the prevalence of signs and symptoms of temporomandibular disorders (TMDs) in a sample population of Al-Hasa by Fonseca's questionnaire.

Materials and methods: A group of 240 patients was randomly selected from outpatients, attending the dental clinical complex of King Faisal University. The participants were grouped based on gender and age-groups: 14 to 20, 21 to 40, 41 to 60, and $61 \leq$ years. Each participant was provided with a questionnaire and points were given accordingly for each question. The sum of points was used to classify the severity of TMD. The obtained data were analyzed with SPSS 21 and the significance level of p was fixed at ≤ 0.05.

Results: Among all participants examined, 131 participants had no TMD (54.6%), 79 had mild TMD (32.9%), 19 had moderate TMD (7.9%), and 11 had severe TMD (4.6%). TMD problem increases with age and significance level ($p = 0.007$) and females had more TMD problems than males ($p = 0.008$).

Conclusion: The Fonseca's questionnaire is an effective tool for screening the signs and symptoms of TMDs, in a short period, and classifies patients according to their severity. According to the study results, approximately 45.4% of the patients had some degree of TMD problems. The present study is cross-sectional with a limited number of participants and it should be followed by a longitudinal study in the near future to validate.

Clinical significance: Early detection of TMD problems will help in treatment planning and prognosis.

Keywords: Fonseca's questionnaire, Missing tooth, Pain, Parafunctional movements, Temporomandibular disorders.

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Introduction

Temporomandibular disorder (TMD) is a terminology that is used to describe a group of painful conditions in the orofacial region that induces pain and associated difficulties during movements of the temporomandibular joint (TMJ) and its associated muscles which are helping with its movements.[1,2] Among the health problems, TMD and its associated difficulties hold a significant position and they are multifactorial and complex in nature.

Several factors involve in the formation of TMD problems, such as missing teeth, imbalanced occlusion, stress, fatigue of masticatory muscles, abnormal oral habits, and abnormal function of structures related to TMJ.[3] Laskin coined the term "myofascial pain dysfunction syndrome." He described several factors to the characteristics of pain, joint sounds, and reduced mandibular movements and presented experimental evidence for the notion of a psychophysiological condition.[4]

Clinically, the most common signs are noises during opening and closing of the mandible and deviation or restriction in mandibular range of motion and the most common symptom of TMD is pain during mandibular movements, at rest, or on palpation of the muscles.[5] The prevalence rate of TMD-associated difficulties ranges from 20 to 50% among different groups of people. These variabilities may be due to racial differences, differences in sample, criteria, and methods used for collecting information.[6] With higher prevalence among women and outnumbering males by at least four to one, TMD problems are more among older age-groups and increases with aging.[7]

For researchers, checking for TMDs in the population is still a concern and a challenge. Different evaluation tools have been used to assess TMDs, one being the Fonseca's questionnaire (FQ).[8] To diagnose the magnitude, signs, symptoms, and the frequency of TMD, FQ is used; it provides the benefits of being cost-effective and an easy-to-use instrument. It is also fast and has less effect on the examiner and less uncertainty in the measurements.[9]

Previously performed studies in different parts of the Kingdom had shown the prevalence of different degrees of TMD-associated problems among the examined communities. This substantiates the need for such a study in the Eastern Province of the Kingdom.

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It will help with the identification of approximate ideas about TMD-associated problems and help plan how to overcome this issue. The goal of this cross-sectional study was: (1) to determine the prevalence rate, (2) severity of TMD among different age-groups and genders of the patients reported to the College of Dentistry's Dental Clinical Complex.

MATERIALS AND METHODS

After getting approval from institutional ethical committee (KFU/CoD/R/005/2019), a descriptive cross-sectional study was carried out among patients reported to the College of Dentistry's Dental Clinical Complex in the Eastern Province of Saudi Arabia. This study was conducted in full compliance with the Declaration of Helsinki. The study was carried out between the period of September 2019 and February 2020. After taking a thorough clinical history, a random of 240 patients were selected from outpatients and they were grouped into 4 (14–20, 21–40, 41–60, and 61 ≤ years), based on their gender and age (Table 1). The details of the study were explained to each participant and informed consent was obtained from them. Participants were assured that they were free to decline from participating in the study at any time during the study period and obtained information will be treated with the utmost confidentiality. For the study, FQ was used.[7,8,10,11] In order to identify the TMD severity based on symptoms, the questionnaire suggested by Fonseca is widely used because it is easy and accurate to collect relevant data. There were 10 questions to answer with: no, sometimes, and yes (Table 2). Based on the questionnaire developed by Fonseca, a structured questionnaire was designed with two parts. By using the questionnaire, the data were collected as follows: The first part of the questionnaire collected the age and gender of the participants and the second part collected information about symptoms of TMD. Researchers with good fluency in Arabic and English explained the content of the questionnaire and filled the forms.

Inclusion Criteria

- Patients above the age of 13 years
- Saudi nationals from Al-Hasa region

Exclusion Criteria

- Patients with special healthcare needs
- Patients undergoing orthodontic treatment
- Patients with a history of trauma or dental pain
- Clinically diagnosed TMD, undergoing treatment
- Neuromuscular disorders, history of systemic disorders affecting TMJ, and other cognitive disorders
- Any gross pathology of ears

The participants were asked to answer all 10 questions with "yes," "no," and "sometimes" and for each question, only one answer

should be labeled. The response "yes" was given a score of 10, "sometimes" was given a score of 5 for a thorough review of the frequency and intensity of TMD, and the answer "no" was given a score of zero. After summing up all 10 replies, the overall maximum scores were out of 100. The sum of points was utilized to classify the severity of TMD.

Statistical Analysis

The answers "yes," "no," and "sometimes" from each questionnaire were counted for review and the sum was multiplied by the value assigned to each answer: 10, 5, and 0, respectively. The final value was compared with the clinical index and per TMD degree the participants were graded (Table 3). The data obtained were coded

Table 2: Fonseca's questionnaire

	Questions	Responses		
		Yes	Sometimes	No
1	Is it hard for you to open your mouth?	14 (5.8%)	52 (21.7%)	174 (72.5%)
2	Is it hard for you to move your mandible from side to side?	11 (4.6%)	32 (13.3%)	197 (82.3%)
3	Do you get tired/muscular pain while chewing?	14 (5.8%)	59 (24.6%)	167 (69.6%)
4	Do you have frequent headaches?	34 (14.2%)	83 (34.6%)	123 (51.3%)
5	Do you have pain on the nape or stiff neck?	16 (6.6%)	52 (21.7%)	172 (71.6%)
6	Do you have earaches or pain in the TMJ region?	22 (9.2%)	56 (23.3%)	166 (69.2%)
7	Have you noticed any TMJ clicking while chewing or when you open your mouth?	26 (10.8%)	52 (21.7%)	162 (67.5%)
8	Do you clench or grind your teeth?	31 (12.9%)	83 (34.6%)	126 (52.5%)
9	Do you feel your teeth do not articulate well?	39 (16.3%)	68 (28.3%)	133 (55.4%)
10	Do you consider yourself a tense (nervous) person?	32 (13.3%)	74 (30.8%)	134 (55.8%)

Table 1: Participants' distribution pattern

Variables		Numbers	Mean age (years)
Age-groups (years)	14–20	60	41.33
	21–40	60	
	41–60	60	
	61<	60	
Male		60	
Female		60	

Table 3: Prevalence of TMD among patients

Clinical index classification of Fonseca's questionnaire		Prevalence rate of TMD	
		Number	Percentage (%)
Total between 0 and 15 points	No TMD	131	54.6
Total between 20 and 40 points	Mild TMD	79	32.9
Total between 45 and 65 points	Moderate TMD	19	7.9
Total between 70 and 100 points	Severe TMD	11	4.6
TOTAL		240	100

TMD, temporomandibular disorder

Table 4: Prevalence rate of TMD's severity among different age-groups and genders

		TMD						
Participant's variables		No TMD n (%)	Mild TMD n (%)	Moderate TMD n (%)	Severe TMD n (%)	X^2	d	p value
Age-groups (years)	14–20	42	16	2	0	22.759	9	0.007
	21–40	36	18	5	1			
	41–60	32	19	6	3			
	61<	21	26	6	7			
Gender	Male	78 (59.5%)	33 (41.8%)	6 (31.8%)	3 (27.3%)	11.762	3	0.008
	Female	53 (40.5%)	46 (58.2%)	13 (68.4%)	8 (72.7%)			

$p \leq 0.05$ was considered significant using Pearson's Chi-square test; TMD, temporomandibular disorder

and entered into SPSS 21 (SPSS, Chicago, Illinois, United States) to examine statistics. To evaluate the significance between the categorical variables with different grouping factors, the Chi-square test was used. The level of statistical significance was fixed at $p \leq 0.05$.

RESULTS

A total of 240 randomly selected patients participated in this study and their mean age was 41.33 years. Table 3 shows the distribution of participants according to variables.

The distribution of participants according to Fonseca's anamnestic index–based severity levels of TMD dysfunction is shown in Table 3: 54.6% (131) of the participants have no symptoms of TMD, 32.9% (79) have mild TMD, 7.9% (19) have moderate TMD, and only 4.6% (11) have severe TMD.

According to Table 4, 59.5% (78) of male participants and 40.5% (53) of female participants did not have any TMJ-related symptoms. Regarding the presence of TMJ-related symptoms, 33 (41.8%) male and 46 (58.2%) female participants were scored to have mild TMD, 6 (31.8%) male and 13 (68.4%) female participants were scored to have moderate TMD, and 3 (27.3%) males and 8 (72.7%) females had severe TMD. The statiscal analysis shows the presence of significant ($p = 0.008$) difference among genders and females are having more TMD problems than males. The age-wise prevalence distribution is shown in Table 3. Similar to gender-wise distribution, there was a significant association between age and TMDs ($p = 0.007$). With increasing age, the prevalence and severity of the TMD increase. Table 2 shows participants' responses to FQ. The most common symptom presented in the study population was "teeth do not articulate well (16.3%), frequent headaches (14.2%), consider yourself a tense (nervous) person (13.3%), and clench or grind your teeth (12.9%)."

DISCUSSION

Since TMD is a chronic disorder, early diagnosis and TMD treatment are very important, otherwise it will get worse over time.[9] Information on the prevalence and the severity of TMD symptoms in patients reported to dental clinics is given in the present study. FQ involves the processing of knowledge in a limited period with high reliability due to its basic existence.

Based on the previous studies, the prevalence rate of TMD in different populations was observed to vary from 22.6 to 87%. This variation may be due to different sample sizes, selection methodology, and racial variation. In our study, overall 109 (45.4%) participants reported having different levels of TMD problems and among them, the maximum numbers showed mild-to-moderate TMD, 98 (40.8%). This was in agreement with other studies as

mentioned by Shivhare et al.[10] and Karthik et al.[11] Similarly, this result is in agreement with the studies performed among Saudi populations by Habib et al.,[12] Elagib et al.,[13] Al Hayek et al.,[14] Al-Gadhaan et al.,[15] and Aldhalai et al.,[16] Our research showed, as in many previous studies on TMD dysfunction, that there were substantial variations (p 0.007) between males (42, 35%) and females (67, 55.8%). In comparison with males, TMD problems were found to be more prevalent in females, as described by Karthik et al.,[11] Habib et al.,[12] Al Hayek et al.,[14] Al-Gadhaan et al.,[15] Nadersha,[17] Lung et al.,[18] and Jain.[19]

Different physiological features may be associated with high prevalence of TMD in women, such as normal hormonal changes, muscle structures, and various connective tissue characteristics. According to our research, the incidence and severity of TMD increased with age and the statistical analysis revealed that the younger group of participants showed less TMJ dysfunction than the elderly, and between the age-groups there was a substantial difference (p 0.007) (Table 4). Our findings completely align with the findings of Habib et al.,[12] Al Hayek et al.,[14] Aldhalai et al.,[16] Nadersha,[17] Jain,[19] and Alfawzan.[20] As shown in Table 1, the most frequently reported TMJ dysfunction was poor occlusion of teeth (Q9) in "yes," i.e., 16.3%, and this is in agreement with the studies byAlhussini,[9] Habib et al.,[12] and Aldhalai et al.,[16] followed by 14.2% of the participants reporting "yes" for frequent headaches and this totally agrees with the results reported by Shivhare,[10] Elagib,[13] and Alfawzan.[20] And 13.3% of the participants responded to question number 10 regarding tense/nervous person as "yes." This coincides with the findings of Karthik et al.,[11] Habib et al.,[12] Al Hayek et al.,[14] and Taneja et al.[21] This is of clinical significance, as emotional stress is considered to be an important characteristic of TMD. This finding is in accordance with the previous investigations, as emotional stress is influencing changes in muscular activity and occlusion. These data corroborating the relationship between emotional stress and the development of TMDs could be of great importance in the early diagnosis and management of these disorders.

After reviewing the literature, this was the first study to assess TMD prevalence in an adult population of this region. The limitations of this study were that it had a small sample size and was questionnaire based and not involved with clinical examinations. Only information on the prevalence and the severity of TMD in patients reported to dental clinics is given in this study.

CONCLUSION

The followings are the conclusions drawn from this study: There was a significant gender-wise difference present in TMD. With increasing age, the prevalence rate and the severity of TMD increase and 45.6% of the participants had different degrees of TMD, among them the

majority had a mild category. Since these obtained results were based on small participants, more longitudinal studies with a large sample size and a clinical examination are needed to generalize the results.

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