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Prevalence, knowledge and awareness level of temporomandibular joint disorder among Saudi population

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ABSTRACT

Background: Temporomandibular joint Disorder (TMD) are a type of musculoskeletal disease that affects masticatory muscles, the temporomandibular joint (TMJ) and other structures in the oro-facial area. Functional disturbance, facial deformities, headache and TMJ pain are all common symptoms. TMD influences the oral health related quality of life (OHRQL). Therefore, early detection aid in successful intervention and treatments. This observational study aimed to investigate TMD' prevalence among the general Saudi population and their knowledge and awareness levels. *Methodology:* A cross-sectional observational study was conducted through an online self-evaluated questionnaire to assess the knowledge and awareness level of the Saudi population in the 13 central regions between July 2022 – Nov 2022 toward TMD. All statistical analysis was done using the "Microsoft Office Excel software" program and "IBM SPSS Statistics" version 20 program. *Results:* The study included 1580 participants, 72.26% of them were men and 27.4% of them were females. 97.8% of study participants were Saudi. 45.5% aged between 21- 30 years old. 31.5% of participants do not have TMD, 41.5% have mild TMD, 19.3% had moderate TMD and 7.8% have severe TMD. *Conclusion:* Temporomandibular joint Disorder is a complicated process with varying prevalence rates in different populations. According to our investigation, the adult population of the Kingdom of Saudi Arabia has a comparably high prevalence of TMD. Public health programs should prioritize increasing patient and medical staff understanding of TMD.

Keywords: TMD, Prevalence, Knowledge, Awareness, Saudi Arabia, TMD.

1. INTRODUCTION

One of the critical components of extraoral examination of dental patients is the temporomandibular joint (TMJ), as it signifies any diseases that affect the joint and may lead to oral functional problems (Alshahrani et al., 2019). Temporomandibular joint syndrome, often known as temporomandibular disorders (TMD), is one of the common diseases that affect the TMJ that refer to a frequent musculoskeletal condition involving the masticatory muscles and other orofacial structures (Dhakshinya and Santhosh Kumar, 2021). TMD is the most basic cause of non-dental pain in the neck and head area (Shokri et al., 2019).

Environmental, psycho-social and behavioral factors are the etiology of TMD (Saghafi et al., 2022). Also, parafunctional habits included bruxism and clenching, trauma and genetics. Even though the effect of multi factorial causes is still not understood yet (Paulino et al., 2018). The main symptoms of TMDs include pain in the muscles, deviation or deflection of the mandible, jaw lock and the sound of clicking when the mouth is opened and closed (Ali Alfawzan, 2020). Most studies conducted to identify the prevalence of TMDs have concluded that women and younger age groups are the populations most affected by these illnesses (Aboubakr & Elkwatehy, 2021). The earliest medical study described TMD published by Annandale in Lancet on the dis-placement of the lower jaw's inter-articular cartilage and its surgical treatment by operation 1887 (Warburton, 2021).

The variety in presentation and subjectivity in recording the conditions which provide challenges for the evaluation of the TMD (Srivastava et al., 2021). They suggested the Fonseca's An-amnestic-Index (FAI) as an excellent reliability and validity index used to identify the signs and symptoms of TMDs and measure the severity; FAI was a self-evaluation questionnaire with the advantage of easily using either by the general practitioner or epidemiologist (Muddebihal et al., 2021). In 2018, a study conducted by them used the research diagnostic criteria for temporo-mandibular-disease (RDC/TMD) among Brazilian adolescents to investigate TMD prevalence. The authors' results revealed that the TMDs were more common in adolescence and adulthood, with a majority of 34.9 percent and the incidence of symptoms and signs typically rising with age (Bertoli et al., 2018).

While a literature review published in 2019, one of their aims was to assess the prevalence rates of self-reported pain-related TMDs and TMJ sounds in an adolescent group aged 12-18 years. The literature concludes that peaks of the prevalence range between 25-45 ages, and females were suffering more than males. It shows that TMDs prevalence in the general population was increased over recent decades (Akhter, 2019). Lebanese population's prevalence of TMDs was 19.7%, as study showed. The study was released in 2020 and aimed to estimate the prevalence of TMDs and correlate them with depression, stress, and anxiety in the Lebanese. They also found a strong association between depression and TMD and even anxiety has been associated with TMD (Kmeid et al., 2020).

Although there are numerous recent reviews regarding the prevalence and level of knowledge and awareness of TMD, most focus on dental students and practitioners rather than considering the general Saudi population toward it. As there is no research related to our topic, it would be interesting to investigate new data and design an article about the prevalence, level of knowledge, and awareness of TMD in the general Saudi population. Our observational study objective was to investigate the prevalence among the general Saudi population of TMD and whether the population has sufficient knowledge and awareness of the sign and symptoms of TMD.

2. MATERIALS AND METHODS

Study design

This is observational cross-sectional study conducted via an online survey created by the authors and was carried out from July 2022 – November 2022 in the Kingdom of Saudi Arabia.

Study setting

The population participating in our study with an age range from 18-65 years old

Inclusion and Exclusion criteria

Adult Saudi females and males between 18 and 65 years, either with or without symptoms and who agreed to participate in the research, were included in our study. While those non-Saudi under the age of 18 and older than 65 are excluded.

Sample size

The sample size was defined using the Qualtrics calculator with a 1% margin of error and confidence level of 99%; for this study, the participants were required to be at least 666.

The Sample size was estimated using the formula: $n= P (1-P) * Z\alpha^2 / d^2$ with a confidence level of 99%;

n: Calculated sample size
Z: The z-value for the selected level of confidence (1- a) = 1.96.
P: An estimated prevalence of knowledge
Q: (1 – 0.50) = 50%, i.e., 0.50
D: The maximum acceptable error = 0.01.
So, the calculated minimum sample size was:
$n = (1.96)^2 \times 0.50 \times 0.50 / (0.05)^2 = 666$.

Method for data collection and instrument (Data collection Technique and tools)

The tools used were self-evaluated questionnaires developed by Google Form, including Fonseca's Anamnestic Index (FAI), which was already a standardized and validated questionnaire for assessing the prevalence and the severity of TMD based on ten questions regarding the presence the clicking of the temporomandibular joint, pain while chewing, TMJ pain, back and head pain, limitation the jaw movements, malocclusion, parafunctional habits and emotional stress. We took consent to voluntary participation and notified them about the study's objective and data confidentiality before completing the survey.

In addition, to measure the knowledge and awareness levels of the Saudi population regarding the signs and symptoms of TMD and the severity, the second questionnaire was formulated based on reviewing the previous studies and revised some questions to end up with three main sections. Started with demographic data in section one, including individual age, gender, nationality, marital status, socio-economic status and residential region. Section two for the knowledge level measures based on either social status or para-functional habits and occlusal problems may lead to TMD and if clicking sound in TMJ, headache caused by TMDs.

Finally, the last section was to analyze the awareness level of TMDs by answering the following questions: Which of the following contributing factors consider the etiology of TMD? And which symptoms does my person with TMD suffer from? And in your opinion, removing the occlusal interference and myofascial pain treatment with muscle relaxants are effective in managing patients with TMDs. The survey used two versions: Arabic, the native language for Saudis and English version. The participants have the chance to choose which language they prefer.

TMD scoring

Instruct the volunteer participants to mark only one answer for each of ten questions in the Fonseca's Anamnestic Index (FAI). Ten points for the "Yes" answer, "Sometimes" with five points and "No" with zero point. According to the total scores obtained, each participant was assigned into four categories: 0-15 points indicated the individual without disorders, 20-40 points meant mild TMD while 45-65 showed the participant had moderate TMD and the points from 70-100 interpreted as severe TMD.

Knowledge and awareness scoring

In each part of them, there were five questions to measure the level of knowledge and awareness of TMDs. For the correct answer in the awareness section, one point was given and zero points for the wrong answer. While the knowledge part, "Yes" was measured by one value," No" and "I don't know" were calculated with zero value. The total scores of each section varied from 0-5 and were allocated into three levels as follows: low level: 0-2 scores; moderate level: 3 scores; high level: 4-5 scores.

Pilot test

The questionnaire was distributed on above 15 individuals and asked to fill it. This was done to measure the understanding of the questionnaire and the feasibility of the study. The final data of the study doesn't include the pilot data of the study.

Analyzes and entry method

Participants' responses were downloaded from Google forms and saved in the "Microsoft Office Excel software" program. Then analyzed the data using the Statistical Package of Social Science Software (SPSS) version 20.

3. RESULTS

The study included 1580 participants, 72.26% of them were males and 27.4% of them were females. 97.8% of study participants were Saudi. 45.5% aged between 21- 30 years old while 19.3% aged 31- 40 years old. 39.9% of participants have children. 53.9% were single and 43.2% were married. 59.4% of study participant had bachelor degree. 39.2% were employee and 44.6% were students.

Table 1 Socio demographic characteristics of participants (n=1580)

Parameter		No.	%
Age	Less than 20	249	15.8
	21 - 30	719	45.5
	31- 40	305	19.3
	41 -50	207	13.1
	51- 60	83	5.3
	More than 60	17	1.1
Gender	Female	433	27.4
	Male	1147	72.6
Nationality	Saudi	1546	97.8
	Non-Saudi	34	2.2
Marital status	Unmarried	852	53.9
	Married	682	43.2
	Absolute	36	2.3
	Widower	10	.6
Have children	Yes	631	39.9
	No	949	60.1
Region	Patio	26	1.6
	Hollow	194	12.3
	Northern borders	52	3.3
	Riyadh	363	23.0
	Al-Qassim	38	2.4
	Medina	76	4.8
	Eastern Province	149	9.4
	Tabuk	21	1.3
	Jazan	16	1.0
	Hail	12	.8
	Difficult	163	10.3
	Mecca	461	29.2
	Najran	9	.6
Educational level	Primary	7	.4
	Average	25	1.6
	Secondary	285	18.0
	BA	938	59.4
	Diploma	144	9.1
	Postgraduate	181	11.5
Occupation	Employee	619	39.2
	Student	704	44.6
	Unemployed	257	16.3

As illustrated in table (2), 47.7% of participants reported that dental problems cause temporomandibular joint disorder, 58.5% think that TMD cause headache, 48.8% think that TMD cause clicking sounds in the joint, 49.3% reported that psychological problems and bad habits affect TMD and 57.6% think that TMD cause symptoms and auditory-pain and neck.

Table 2 Knowledge of participants of TMDs (n=1580)

Parameter	Yes	No	Don't know
Dental problems cause temporomandibular joint disorder	754 47.7%	100 6.3%	726 45.9%
TMD cause headaches	925 58.5%	97 6.1%	558 35.3%
TMD cause clicking sounds in the joint	771 48.8%	97 6.1%	712 45.1%
Psychological problems and bad habits affect TMD	779 49.3%	132 8.4%	669 42.3%
TMD cause symptoms and auditory-pain and neck	910 57.6%	64 4.1%	606 38.4%

Table (3) shows that 62.8% of participants think that Middle Ages "from 20-50 years old" are high risk group for TMDs. 58.9% reported maxillofacial injury as a cause of TMD, 41.4% reported anxiety, 45.9% reported musculoskeletal disorders, 58.2% dental mismatch and 43.9% reported gnashing of teeth. Regarding symptoms, 54.6% of participants reported difficulties opening mouth, 59.9% crackling sound when opening the mouth, 56.5% pain in the facial muscles, 56.5% earache and 56.6% headache. As illustrated in figure 1, 31.5% of participants do not have TMD, 41.5% have mild TMD, 19.3% had moderate TMD and 7.8% have severe TMD.

Table 3 Knowledge of participants of risks, causes and symptoms of TMDs (n=1580)

Parameter		No.	%
High risk group for TMD	Youth "less than 20 years old"	183	11.6
	Middle Ages "from 20-50 years old"	993	62.8
	Elderly people "over 50 years old"	404	25.6
Causes of TMD	Anxiety	654	41.4
	mouth breathing	358	22.7
	Maxillofacial injury	931	58.9
	Musculoskeletal disorders	725	45.9
	Abnormal body positions	417	26.4
	gnashing of teeth	693	43.9
	Dental mismatch	920	58.2
	DNA	469	29.7
Symptoms of TMD	Difficulties opening the mouth	862	54.6
	A crackling sound when opening the mouth	946	59.9
	Pain in the facial muscles	892	56.5
	earache	892	56.5
	a headache	895	56.6
	Knuckle comment	683	43.2

Table (4) shows that 6% of participants have difficulty opening the mouth, 6.3% have difficulty moving jaw to both sides, right and left, 10.4% suffer from pain in the facial muscles and feel that chewing is tired, 22.3% feel frequent headaches, 15.7% feel stiff neck muscles, 12.3% feel auditory-pain or temporomandibular joint, 16.8% have crackling sound when chewing or opening the mouth, 17.3% suffer from grinding or pressure on teeth and 34.5% feel nervous or tense.

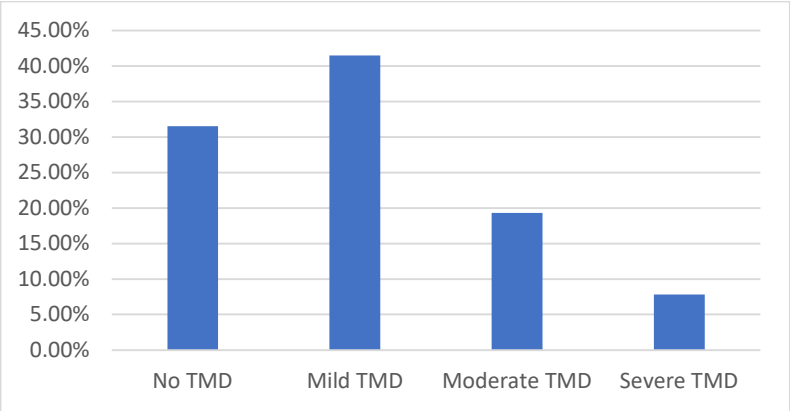

Figure 1 TMD scoring among study participants (n= 1580)

Table 4 Prevalence of TMD symptoms among participants (n=1580)

Parameter	Yes	No	Sometimes
Have difficulty opening the mouth	95 6.0%	1155 73.1%	330 20.9%
Have difficulty moving jaw to both sides, right and left	100 6.3%	1212 76.7%	268 17.0%
Suffer from pain in the facial muscles and feel that chewing is tired	165 10.4%	976 61.8%	439 27.8%
Feel frequent headaches	352 22.3%	701 44.4%	527 33.4%
Feel stiff neck muscles	248 15.7%	833 52.7%	499 31.6%
Feel auditory-pain or temporomandibular joint	195 12.3%	1015 64.2%	370 23.4%
There is a crackling sound when chewing or opening the mouth	266 16.8%	913 57.8%	401 25.4%
Suffer from grinding or pressure on teeth	273 17.3%	917 58.0%	390 24.7%
Feel that teeth bite evenly	537 34.0%	772 48.9%	271 17.2%
Feel nervous or tense	545 34.5%	379 24.0%	656 41.5%

As shown in figure 2, 43% of participants have low level of Knowledge, 41% have moderate level of Knowledge and only 16% have high level of Knowledge. Table (5 and 6) demonstrates a substantial correlation between TMD awareness and knowledge scores among participants with age and gender while TMD prevalence scores were associated with gender, educational level and occupation ($P< 0.05$).

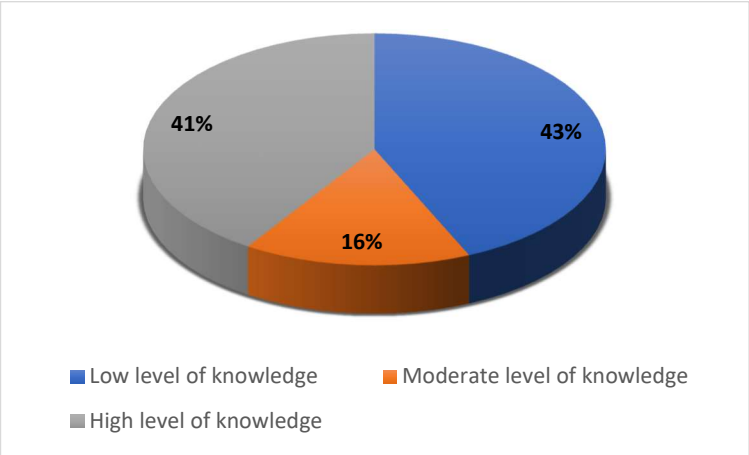

Figure 2 Knowledge and awareness score of TMD among study participants (n= 1580)

Table 5 Association between knowledge scores of participants with their socio demographic characters (n=1580)

		Knowledge score			Total (N=1580)	P value
		Poor	Moderate	Good		
Age	Less than 20	114	53	82	249	0.002
		16.7%	21.1%	12.7%	15.8%	
	21- 30	308	92	319	719	
		45.0%	36.7%	49.5%	45.5%	
	31- 40	136	46	123	305	
		19.9%	18.3%	19.1%	19.3%	
	41- 50	86	37	84	207	
		12.6%	14.7%	13.0%	13.1%	
	51- 60	28	21	34	83	
		4.1%	8.4%	5.3%	5.3%	
	More than 60	12	2	3	17	
		1.8%	0.8%	0.5%	1.1%	
Nationality	Saudi	667	245	634	1546	0.595
		97.5%	97.6%	98.3%	97.8%	
	Non-Saudi	17	6	11	34	
		2.5%	2.4%	1.7%	2.2%	
Marital status	Single	372	125	355	852	0.720
		54.4%	49.8%	55.0%	53.9%	
	Married	294	116	272	682	
		43.0%	46.2%	42.2%	43.2%	
	Divorced	14	7	15	36	
		2.0%	2.8%	2.3%	2.3%	
	Widowed	4	3	3	10	
		0.6%	1.2%	0.5%	0.6%	
Gender	Male	256	56	121	433	0.001
		37.4%	22.3%	18.8%	27.4%	
	Female	428	195	524	1147	
		62.6%	77.7%	81.2%	72.6%	
Educational level	Primary	2	0	5	7	0.081
		0.3%	0.0%	0.8%	0.4%	
	Average	10	5	10	25	
		1.5%	2.0%	1.6%	1.6%	

	Secondary	134	52	99	285	
		19.6%	20.7%	15.3%	18.0%	
	BA	383	145	410	938	
		56.0%	57.8%	63.6%	59.4%	
	Diploma	68	27	49	144	
		9.9%	10.8%	7.6%	9.1%	
	Postgraduate	87	22	72	181	
		12.7%	8.8%	11.2%	11.5%	
Occupation	Employee	287	95	237	619	0.246
		42.0%	37.8%	36.7%	39.2%	
	Student	293	119	292	704	
		42.8%	47.4%	45.3%	44.6%	
	Unemployed	104	37	116	257	
		15.2%	14.7%	18.0%	16.3%	

Table 6 Association between TMD scores of participants with their sociodemographic characters (n=1580)

		TMD score				Total (N=1580)	P value
		No TMD	Mild TMD	Moderate TMD	Severe TMD		
Age	less than 20	81	101	47	20	249	0.661
		16.3%	15.4%	15.4%	16.3%	15.8%	
	21- 30	245	291	132	51	719	
		49.3%	44.4%	43.3%	41.5%	45.5%	
	31- 40	90	131	57	27	305	
		18.1%	20.0%	18.7%	22.0%	19.3%	
	41- 50	53	94	43	17	207	
		10.7%	14.4%	14.1%	13.8%	13.1%	
	51- 60	22	32	21	8	83	
		4.4%	4.9%	6.9%	6.5%	5.3%	
	more than 60	6	6	5	0	17	
		1.2%	0.9%	1.6%	0.0%	1.1%	
nationality	Saudi	485	639	300	122	1546	0.603
		97.6%	97.6%	98.4%	99.2%	97.8%	
	Non-Saudi	12	16	5	1	34	
		2.4%	2.4%	1.6%	0.8%	2.2%	
Marital status	Single	281	355	153	63	852	0.459
		56.5%	54.2%	50.2%	51.2%	53.9%	
	Married	205	278	142	57	682	
		41.2%	42.4%	46.6%	46.3%	43.2%	
	Divorced	8	19	6	3	36	
		1.6%	2.9%	2.0%	2.4%	2.3%	
	Widowed	3	3	4	0	10	
		0.6%	0.5%	1.3%	0.0%	0.6%	
Gender	Male	178	160	74	21	433	0.001
		35.8%	24.4%	24.3%	17.1%	27.4%	
	Female	319	495	231	102	1147	

		64.2%	75.6%	75.7%	82.9%	72.6%	
Educational level	primary	0	3	1	3	7	0.007
		0.0%	0.5%	0.3%	2.4%	0.4%	
	Average	4	13	4	4	25	
		0.8%	2.0%	1.3%	3.3%	1.6%	
	secondary	92	118	48	27	285	
		18.5%	18.0%	15.7%	22.0%	18.0%	
	BA	310	393	176	59	938	
		62.4%	60.0%	57.7%	48.0%	59.4%	
	diploma	35	58	35	16	144	
		7.0%	8.9%	11.5%	13.0%	9.1%	
	Postgraduate	56	70	41	14	181	
		11.3%	10.7%	13.4%	11.4%	11.5%	
Occupation	employee	200	233	137	49	619	0.029
		40.2%	35.6%	44.9%	39.8%	39.2%	
	Student	231	300	124	49	704	
		46.5%	45.8%	40.7%	39.8%	44.6%	
	Unemployed	66	122	44	25	257	
		13.3%	18.6%	14.4%	20.3%	16.3%	

4. DISCUSSION

As the 2end most common reason of oro-facial-pain, TMD is extremely common. Patients with TMD typically seek dental care from dentists in the vast majority of cases. Dental professionals should therefore gain a thorough understanding of TMD in order to accurately identify and treat the condition (Alhussini, 2017; Gonçalves et al., 2010). This study aims to explore the pre-valence among the general Saudi population of TMD and whether the population has sufficient knowledge and awareness of the sign and symptoms of TMD.

In our study, 31.5% of participants do not have TMD, 41.5% have mild TMD, 19.3% had moderate TMD and 7.8% have severe TMD. Investigation at KAU-DH found that 72.5% of individuals had TMDs of varying degrees, of which 6.8% had severe symptoms, contrary to lower percentages reported in a prior Saudi study (Alhussini, 2017). In a Brazilian population, an epidemiological investigation by (Gonçalves et al., 2010) found that (TMD) signs and symptoms were present in 30–39% of the sample. However, (Jang et al., 2016) found that professional musicians, instrumentalists and high school students who take music classes all had a greater prevalence (61.3%). Numerous epidemiological research on the epidemiology of TMDs in patient and nonpatient groups have been carried out. Studies have shown that between 60% and 75% of participants will exhibit one TMD symptom and 35% TMD sign and between 50% and 75percent of the people will experience TMD signs at some point in their lives, with an estimated 35% exhibiting moderate symptoms (Olivares et al., 2016). According to (Graue et al., 2016), TMDs were more prevalent in-girls., which typically peaked around the age of 16.

Although the majority of people exhibit symptoms of temporomandibular dysfunction, few actually seek treatment for it. The most typical signs and symptoms include functional pain in the muscles around the joints, clicking and crepitation in the TMJ and (difficulty-opening) the-mouth and deviation when doing so. Without additional medical intervention, these symptoms typically go away on their own. If not, conservative techniques are first employed with generally positive outcomes for patients. The multifaceted etiology of temporomandibular dysfunction necessitates a multidisciplinary approach (Shokri et al., 2019; Paulino et al., 2018). In our study, 6% of participants have difficulty opening the mouth, 6.3% have difficulty moving jaw to both sides, right and left, 10.4% suffer from pain in the facial muscles and feel that chewing is tired, 22.3% feel frequent headaches, 15.7% feel stiff neck muscles, 12.3% feel auditory-pain or temporomandibular joint, 16.8% have crackling sound when chewing or opening the mouth, 17.3% suffer from grinding or pressure on teeth and 34.5% feel nervous or tense.

According to Jang et al., (2016) and Goncalves et al., (2010), TMJ discomfort is the second most prevalent symptom among TMD patients. Additionally, TMD pain was shown to be the greatest public complaint among Saudi Arabian adolescent patients by Alkohtani et al., (2016). In a Saudi study, headaches were reported as a primary complaint by 58.6% of the participants. This may be explained by the claim made by the Head-ache-Classification Committee of the Inter-national Headache-Society (IHS) in 2013 that "intracranial structures do not generate pain or head-ache and facial-pain and headache are secondary to TMD."This supports the

findings of Hara et al., (2016) that the health of the TMJ is substantially linked with headache and myofascial pain. The majority of KAU-DH patients with TMD (42%) reported having clicking as a frequent symptom. This is in line with a study of TMD symptoms and signs conducted in a Canadian community by (Locker & Slade, 1988), who discovered that the most common early articular changes were TMJ noises. Only 10% of the population experienced joint noises, according to Glass et al., (1993) assessment on a metropolitan area.

Our study showed significant association between symptoms of TMD with gender, educational level and occupation. On the other hand, research by Goncalves et al., (2010) found a tenuous link between age and TMD symptoms. But whereas Jang et al., (2016) and others have reported that (TMD) signs and symptoms are more prevalent in young people, Köhler et al., (2009) and Glass et al., (1993) have observed that (TMD) signs and symptoms increase with age. Although women are more aware of their TMD issues than men, the Saudi study's findings demonstrated no significant relationship between gender and TMD, which is in agreement with Wang et al., (2009) and Goncalves et al., (2010). In contrast, Jang et al., (2016) and Chisnoiu et al., (2015) discovered that women Pt had a higher pre-valence of TMD.

Resources for patient education have been proven to be helpful for those with chronic pain in locating methods of pain control and coping, connecting with psychosocial supports and encouraging the adoption of self-management techniques so the patient can actively participate in the healing process. People who experience TMD symptoms require tools that enable them to consider all available options for medical intervention or avoidance and that equip them not only to ask the inquiries that will assistance them choose the best course of action, but also to create and maintain successful coping mechanisms (Le Resche et al., 1993).

According to our study results, age and gender were statistically significant with knowledge scores of TMD. There was a significant-difference between general practitioners and TMD experts on the aetiology, diagnosis and treatment of TMD in the study by Just et al., (1991). These outcomes are essentially in line with those of this investigation. However, the findings of Le Resche et al., (1993) do not agree with those of the present investigation. In the later study, the participating dentists generally possessed greater expertise in the aetiology area, but their degree of expertise in the pathophysiology, diagnosis and therapy domains was inadequate and lacking. Though differences in knowledge between male and lady-dentists were not significant, general practising dentists and specialists were found to have significantly different opinions, which is in line with the findings of this study regarding knowledge and attitude. In contrast to the findings of the current study, a prior study found little difference between the opinions of practising dentists and those of TMD experts and it was concluded that the participating dentists knew more about the etiologic factors while their ignorance was clear in the areas of pathophysiology, diagnosis and treatment (Glaros et al., 1994).

Evidence-based knowledge regarding temporomandibular disorders is necessary for patients, their families, the general public and healthcare providers (TMDs). Patients 'and their families' access to appropriate diagnoses and care is problematic. Additionally, there is a need to educate the general public about these disorders and to provide accurate information and resources to assist people in coping with these conditions because orofacial pain and the symptoms that may be connected to TMDs are experienced by a large number of people in the United States and around the world (Paulino et al., 2018; Srivastava et al., 2021). The creation and assessment of educational materials pertaining to TMD should concentrate on the full spectrum of information sought by patients and their families, from the initial examination of symptoms to reliable diagnostic and therapeutic modalities, to sources of peer support and consumer roadmaps for the kinds of medical experts to consult and seek treatment from.

5. CONCLUSION

TMD is a complex process with differing rates of prevalence in various groups. Our research indicates that there is a comparatively high frequency of TMD in the adult population of Kingdom of Saudi Arabia.

Recommendations

We recommend that further educational campaigns should be inaugurated to raise awareness about TMD and associated complications. Public health initiatives should focus on raising TMD awareness among patients and medical personnel. A bigger sample size should be used in future studies and a proven screening method like the TMD/pain screener should be used.

Ethical approval

The research proposal was approved by the Regional Research and Ethics committee of King Abdelaziz University, Saudi Arabia, with letter number (004-01-23).

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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