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Evaluation of association between self-reported harmful Oral Habits and the Temporomandibular joint Disorders (TMD) amongst oral hygiene students

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C van Wyk,[1] M Morule,[2] P M Mabongo,[3] TK Madiba[4]

ABSTRACT

Introduction

Engagement in harmful oral habits is one of the biggest initiating factors of Temporomandibular disorder (TMD) related signs and symptoms among individuals. University students are particularly at risk for developing TMD often due to a higher degree of engagement in harmful oral habits due to writing of examinations. The purpose of the study was to determine the association between self-reported harmful oral habits and the TMD related signs and symptoms amongst oral hygiene students at a training institution.

Methods

A cross-sectional analytic survey was carried out. A pretested-validated modified self-administered questionnaire about the engagement in oral habits that may be harmful to the Temporomandibular joint (TMJ) and the experience of TMD related symptoms was distributed to all oral hygiene students and additionally a clinical examination of the TMJ was performed to assess for signs and symptoms of TMD.

Data analysis was done with SPSS version 30. Quantitative variables were summarised as proportions, frequencies, mean with standard deviations, ranges and percentages. Chi square test was used to evaluate the association between variables with the level of significance set at $p \leq 0.05$.

Results

The study had a response rate of 95.6% with ages ranging from 18 to 28 with the mean age of 20.6 (SD=1.97) Majority (84%) of the participants were female. Most 37 (84%) students had bad habits such as nail biting, chewing gum, resting chin on hands, cheek chewing, lip biting, clenching their teeth. Significantly more participants participated in these bad habits after exams than before exams, p=0.001. More than half (52.3%) reported to have a stiff/tired jaw, 31% had myofacial pain and 27.3% suffered headaches attributed to the TMJ before exams. The prevalence of TMD was found to be 59%.

Conclusions

Most students had bad habits and the occurrence of this were done daily in many cases, as well as weekly and they were observed after and before exams suggesting that the habits could be seen to be increased during stressful times. The prevalence of TMD was higher than in many studies

Key words

Temporomandibular disorder, Temporomandibular joint, harmful oral habits

Authors and affiliations

1. Prof Candice van Wyk, Adjunct Professor/ Assistant Director: Oral Hygiene, PhD (Paraclinical Sciences) (Pret); PhD (Medical Microbiology) (Pret); PGDip Health Systems Management (Executive Leadership) (Pret); ASELPH Fellow, Department of Community Dentistry, University of Pretoria, Pretoria, E-mail: candice.vanwyk@up.ac.za, ORCID: https://orcid.org/0000-0001-7087-0106
2. Ms Mpho Morule, Lecturer, Dip OH; PGCHE; Bed Hons (Education); MHPE, Department of Dental therapy and Oral hygiene, Sefako Makgatho Health Sciences University, School of Dentistry, E-mail: mpho.morule@smu.ac.za, ORCID: https://orcid.org/0000-0001-7729-3842
3. Prof Mzubanzi Mabongo, Head of Department Maxillofacial and Oral Surgery, BDS, MChD, FCFS, School of Dentistry, Faculty of Health Sciences, University of Pretoria, E-mail: mzubanzi.mabongo@up.ac.za
4. Prof Thomas K Madiba, Adjunct Professor/ Head Clinical Unit, B. Dent Ther; BDS; DHSM; MChD. Department of Community Dentistry, University of Pretoria, Pretoria, E-mail: thommy.madiba@up.ac.za or thommy.madiba@gmail.com, ORCID: https://orcid.org/0000-0002-0171-0595

Corresponding Author

Prof Candice van Wyk, Department of Community Dentistry, Faculty of Health Science, University of Pretoria, Pretoria, South Africa,
Email: emcandice.vanwyk@up.ac.za
Tel: 012 319 2416

INTRODUCTION

Temporomandibular joint (TMJ) is an important joint that allows people to eat, yawn, kiss and suck. This joint is described as ginglymoarthrodial joint as it allows both hinge and gliding movement.[1] The articulating surfaces of the joint are covered by fibrocartilage. The TMJ is divided by biconcave fibrocartilaginous structure located between the mandibular condyle and the temporal bone component of the joint known as the articular disc[2]. This articular disc divides the joint into two cavities, the upper and lower joint, together, with the teeth they are collectively referred to as the "trijoint complex".[1] The joint is surrounded by fibrous capsule which helps in stabilising the joint. This fibrous capsule extends from cranial articular surface to the neck of the condyle. The lateral ligament as well as the sphenomandibular and stylomandibular ligaments play an important role in the kinematics of the jaw.[3]

In normal circumstances the articular disc remains between the articulating surfaces. Derangement between the position of the articular disc in relation to the articulating surfaces may result in clicking sound[2] and / or restricted mouth opening. This is regarded as one of the early signs of TMJ disease. An abnormal motion between the disc and mandible causes a clicking sound.[2] A developing disjunction is present during

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the early stages whereas it can become a chronic problem later. Clicking results when the disc is in a slightly more forward position and the condyle moves over the disc and clicks into its place.[2]

Temporomandibular disorder (TMD) can be defined as a condition in which the tempo-mandibular joint (TMJ) functions abnormally, resulting in clinical signs and symptoms experienced by the individual.[4] Symptoms may include clicking or popping noises when mobilising the jaw, difficulty opening the mouth, during which jaw locking may also occur as well as pain in the ear, temporal and jaw regions.[4]

Some literature define TMD as a heterogeneous group of psychophysiological disorders characterised by either orofacial pain or a dysfunction in chewing or even both simultaneously, which is caused by injury or inflammation of the temporomandibular joint and associated muscles, ligaments and nerves.[5] The cardinal features are namely, orofacial pain, restricted jaw motion and joint noise.[2] Although psychosocial factor are known to be a predisposing factor, the aetiology is multifactorial.[6] The factors that are reported as the cause of TMD include stress, muscular dysfunction, changes in dental occlusion[6], chronic and repetitive tooth grinding and clenching[7] and parafunctional habits such as chewing gum.[8]This disorder leads to severe discomfort and pain during mastication, limitation/deviation in jaw opening, protrusion or lateral movements as well as clicking and dislocation of the joint and crackling or popping of the jaw.[9] It also leads to nerve irritation and inflammation in the infratemporal and temporal regions of the face leading to swellings on the side of the face.[8] Some patients may present with pre-auricular, popping sound in ears, and bruxism or grinding of teeth are prevalent.[8]

It has been reported that bad oral habits are the biggest etiological factor in the development of the TMD,[10] possibly leading to traumatic dental occlusion affecting masticatory muscles, teeth and the temporomandibular joint. An anamnestic study (focusing on current and previous medical history of patients) found that bad oral habits such as onychophagy (excessive biting of nails and or toe nails), bruxism, biting or clenching objects between teeth, smoking pipe, biting lips or cheeks continuously as well as resting their jaw on their hand were reported by most patients with TMD upon questioning.[10]

The debate on the signs and symptoms for TMD have been going on since the 1900s. A review article on bruxism and TMD conducted by Kalamir et al., in 2006 illustrated that 172 relevant papers were found, where 101 found an association between bruxism and TMD but 71 did not.[11] The authors concluded that although there seems to be a very strong relationships between TMD and bruxism, it is very difficult to conduct a study of such sort because of the lack of universally accepted definition for bruxism and TMD (and what it entails) which leads to inconsistent variable measurements in different research papers such as duration and frequency, therefore bruxism's exact role is still seen as unresolved.[11]

Another oral habit that has been reported to be harmful to the masticatory muscle and the TMJ is chewing gum sticks.[12] Wicour et al. in 2001 reported TMD in 62,4% of girls aged 15-16 years who were chewing gum sticks. This high prevalence was followed by hand resting on head.[12]. The authors concluded that gum stick chewing was the primary cause of TMD.[12]

A study conducted in 2016 by de Oliveira et al., among high school students of the ages 16-19 refer to the bad oral habits as parafunctional. After conducting a cross-sectional study, they reported a high prevalence of individuals with parafunctional habits (91.5%), being chewing gum the most common habit in the sample (65.9%), followed by chewing ice/ lollipops (57.4%) and lip sucking (53.5%).[13] Studies conducted regarding the risk assessment on oral parafunctions in relation to TMD discovered that the most prevalent reported oral parafunctional habits included: teeth clenching and grinding, nail biting and chewing gum sticks.[5,] However, a study conducted by Michelotti et al in 2010[14] found that nail biting was not a risk factor for any of the TMD subgroups (men and women) analysed, despite the fact that incisal clenching has been reported to reduce anterior joint space and to determine disc compression. On the other hand, the authors found a significant association between daytime teeth clenching/ grinding and myofacial pain, one of the subgroups of TMD which agreed with previous studies.[14]

A study conducted by Conti et al., investigated the association between TMD signs and symptoms and engagement in harmful oral habits among high school and university students.[2] The study found a strong association between engagement in harmful oral habits and TMD related signs and symptoms.[2] The study also found an association between increased stress levels (caused by exams and tests) and TMD related signs and symptoms among the students. The reviewed literature shows that there is a strong association between participation in harmful oral habits and TMD related signs and symptoms among university students.[2,14]

Although TMD has been highly researched, the approach in conducting this study emphasises on oral health habits' contribution towards TMD.

The present study intends targeting all registered students in oral hygiene who are at different levels of their studies and therefore have different study responsibilities with increased workload as the level of the study goes up. The study compared this groups to assess which level had more of the TMD symptoms and will hopefully recommend or develop interventions should the results point out to an increased level of symptoms with increased workload. The aim of the study therefore was to investigate if there was an association between self-reported harmful Oral Habits and the temporomandibular joint disorders among oral hygiene students at a training institution in Pretoria. The objectives were to determine the prevalence and severity of TMD signs and symptoms, the prevalence and frequency of harmful oral habits, determine factors that are associated with TMD in this cohort and lastly the severity of TMD was compared before and after exams.

Methodology

Ethical approval was obtained from the University of Pretoria, Faculty of Health Sciences Ethics committee (732/2022). No personal details of the students were disclosed, and all information was strictly confidential and anonymous.

Study Design

A cross-sectional analytic survey was carried out on undergraduate oral hygiene students at University of Pretoria.

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Patient/ Research Object Selection

The self- completed questionnaires about the engagement in oral habits that may be harmful to the TMJ and the experience of TMD related symptoms was distributed to all oral hygiene the School of Dentistry, University of Pretoria. The number of Oral hygiene students registered for 2023 was 46 which made the population of the study.

Measurements/ Data Collection

A pretested-validated modified self-administered questionnaire[15] was used to collect information on the socio- demographic characteristics, knowledge and practice patterns of the students with regard to their engagement in harmful oral habits and their experience of signs and symptoms related to TMD. The students were a=sked to list their engagement in harmful oral hygiene habits such as nail biting, pen chewing, cheek chewing, resting their chin in their hands etc. The students were asked about any signs and symptoms they experienced which may be related to TMD and lastly, if they had had trauma to their head in recent times. All the questions were closed ended.

Students were assessed by an experienced specialist maxillofacial and oral surgeon a month before the midyear examination and a first month after the midyear recess/break for signs and symptoms of TMD. A stethoscope was used to assess the TMJ sounds.

The clinical signs and symptoms were compared. All participants were given a unique identifier used for both the questionnaire and the clinical examination.Diagnostic criteria for TMD (DCR/TMD) was used to assess the severity of the TMD.

Data Analysis

Data was collected using a data collection sheet. Data was then transferred into an excel spread sheet. Data analysis was done with SPSS version 30. Quantitative variables were summarised as proportions, frequencies, mean with their standard deviations, range and percentages. Chi square test was used to evaluate the association between variables: Level of significance was set at $p \leq 0.05$.

Results

The study had a response rate of 95,6% as 44 out of 46 students participated in the study. The ages ranged from 18 to 28 with the mean age of 20.6 (SD=1.97) and 37 (84%) participants were female with 7(16) being male. As far as year of study was concerned 20(46%) were in the first year, 12(27%) were in the second year and 12(27%) were in the third year.

To check the intra-examiner reliability the specialist re-examined every fifth patient and the kappa was found to be 80%

Intervention: Participants who presented with clicking TMJ sounds were referred for an x-ray and further management was implemented.

The majority of students had bad (harmful oral habits) habits such as nail biting, chewing gum, resting chin on hands,

Table 1: The frequency of the occurrence of bad habits in participants (n=44)

Variable (Before the examination)	Daily n%)	Monthly n%	Weekly n%	N/A n%	Variable (After the examination)	Daily n%	Monthly n%	Weekly n%	N/A n%
Nail-biting before exams	13 (29.5)	2(4.5)	8(18.2)	21(47.7)	Nail biting after exams	13(29.5)	2(4.5)	7(15.9	22 (50)
Clenching before exams	11(25)	0(0)	13(29.5)	20(45.5)	Clenching after exams	12(27.3)	0(0)	13(29.5)	20(43.2)
Grinding before exams	6(13.6)	1(2.3)	8(18.2)	29(65.9)	Grinding after exams	6(13.6)	1(2.3)	5(11.4)	32(72.8)
Unilateral chewing before exams	13(29.5)	3(6.8)	6(13.6)	22(50)	Unilateral chewing after exams	16(36.4)	1(2.3)	7(15.9)	20(45.5)
Biting objects before	8(18.2)	0(0)	11(25)	25(56.8)	Biting object after exams	8(18.2)	4(9.1)	8(18.2)	24(54.4)
Lip biting before	7(15.9)	4(9.1)	8(18.2)	25(56.8)	Lip biting after exams	10(22.7)	2(4.5)	7(15.9)	25(56.8)
Cheek chewing before exams	4(9.1)	4(9.1)	7(15.9)	29(65.9)	Cheek chewing after exams	6(13.6)	3(6.8)	6(13.6)	29(65.9)
Chewing ice before	0(0)	14(31.8)	14(31.8)	16(36.4)	Chewing ice After exmas	0(0)	12(27.3)	9(20.5)	23(52.2)
Chewing gum Before exams	11(25.0)	12(27.3)	10(22.7)	11(25.0)	Chewing gum after exams	6(13.6)	10(22.7)	15(34.1)	13(29.6)
Resting chin On hands before exams	21(47.7)	2(4.5)	14(31.8)	7(15.9)	Resting chin after exams	23(52.3)	1(2.3)	13(29.6)	7(15.9)
Yawn wide Before exams	20(45.5)	2(4.5)	8(18.2)	14(31.8)	Yawn wide after exams	14(31.8)	5(11.4)	5(11.4)	20(45.4)

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Table 2: Self-reported occurrence of bad habits and symptoms of TMD by participants (n=44)

Variable	Yes n%	No n%	Variable	Yes n%	No n%	Variable	Yes n%	No n%
Do you engage in these habits more frequently during stress times	37(84.1)	7(15.9)	Do you experience pain when opening or closing your mouth	8(18.2)	36(81.8)	Do you experience pain in your muscles of mastication when chewing food	5(11.4)	39(88.6)
Do you experience clicking sounds when chewing or opening mouth	15(34.1)	29(65.9)	Does your jaw get locked out of place	6(13.6)	38(86.4)	Do your jaw get stiff or tired at times	23(52.3)	21(47.7)
Do you have pain in or around your ears, temples or cheek	14(31.8)	30(68.2)	Have you suffered recent trauma to your head, neck or jaw	3(6.8)	41(93.2)	Did you suffer from myalgia before exams	1(2.3)	43(97.7)
Did you suffer from myalgia during exams	2(4.5)	42(95.5)	Did you suffer from myofascial pain before exams	14(31.8)	30(68.2)	Did you suffer from myofascial pain during exams	6(13.6)	38(86.4)
Did you suffer from Antralgia before exams	3(6.8)	41(93.2)	Did you suffer from Arthralgia during exams	5(11.4)	39(88.6)	Have you suffered headaches attributed to TMJ before exams	12(27.3)	32(72.7)
Did you suffer from headaches attributed to TMJ during the exams	7(15.9)	37(84.1)						

cheek chewing, lip biting, clenching their teeth and the occurrence of this were done daily in many cases and weekly and they were observed more after the examinations than before examination suggesting that the habits could be seen to be increased during stressful times.

Self-reported occurrence of bad habits and symptoms of TMD are reported in Table 2 above.

In Table 2 above 84% of the participants reported that they practiced the bad habits more during stressful times. More than half (52.3%) reported to have a stiff/tired jaw, 31% had myofacial pain and 27,3% suffered headaches attributed to the Temporomandibular joint before exams

The table below depicts the prevalence of TMD before and after exams.

Table 3: Prevalence of TMD before and after exams (n= 44)

Variable	Yes (n/%)	No (n/%)
TMD before exams	26(59)	18(41)
TMD after exams	26(59)	18(41)

The prevalence of TMD was found to be 59% after the exams and before exams.

Table 4 below depicts the association of bad habits before and after exams

Table 4: Associations between bad habits before and after exams (n=44)

Nail biting after exams								
Variable	**frequency**		**daily**	**monthly**	**weekly**	**n/a**	**Total**	**p=value**
Nail biting before exams	daily	1	10	0	0	2	13	0.001
	monthly	0	0	2	0	0	2	
	weekly	0	0	0	20	1	21	
	N/A	0	3	0	1	4	8	
Total		**1**	**13**	**2**	**21**	**7**	**44**	
Clenching after exams								
Variable	**frequency**		**daily**	**N/A**	**weekly**		**Total**	**p=value**
Clenching before exams		0	0	1	0		1	0.003
	Daily	0	7	1	3		11	
	N/A	1	1	13	3		19	
	Weekly	0	4	2	7		13	
Total		**1**	**12**	**18**	**13**		**44**	
Grinding after exams								
Variable	**frequency**		**daily**	**monthly**	**weekly**	**n/a**	**Total**	**p=value**
Grinding before exams	daily	0	2	1	0	3	6	0.001
	Monthly	0	0	0	0	1	1	
	N/A	1	1	0	1	26	29	
	weekly	0	3	0	4	1	8	
Total		**1**	**6**	**1**	**5**	**31**	**44**	

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Unilateral chewing after the examination								
Variable	frequency		daily	monthly	n/a	weekly	Total	p=value
Unilateral chewing before		0	1	0	0	1	2	0.01
	daily	1	9	0	3	0	13	
	monthly	0	1	0	1	1	3	
	n/a	0	5	1	13	1	20	
	weekly	0	0	0	2	4	6	
Total		1	16	1	19	7	44	
Biting objects after the examination								
Variable	frequency		daily	monthly	n/a	weekly	Total	p=value
Biting objects before		1	0	0	0	0	1	0.001
	daily	0	5	0	1	2	8	
	n/a	1	1	2	18	2	24	
	weekly	0	2	2	3	4	11	
Total		2	8	4	22	8	44	
Lip biting/sucking after								
Variable	frequency		daily	monthly	n/a	weekly	Total	p=value
Lip biting/sucking before	daily	0	4	0	2	1	7	0.001
	monthly	0	3	1	0	0	4	
	n/a	1	2	1	20	1	25	
	weekly	0	1	0	2	5	8	
Total		**1**	**10**	**2**	**24**	**7**	**44**	
Cheek chewing after								
Variable	frequency		daily	monthly	n/a	weekly	Total	p=value
Cheek chewing before		0	1	0	0	0	1	0.001
	daily	0	4	0	0	0	4	
	monthly	1	0	2	1	0	4	
	n/a	2	1	1	24	0	28	
	weekly	0	0	0	1	6	7	
Total		**3**	**14**	**5**	**17**	**6**	**44**	
Yawn very wide after exams								
Variable	frequency		daily	monthly	n/a	weekly	Total	p=value
Yawn very wide before exams		0	0	0	1	0	1	0.02
	daily	0	3	1	0	0	4	
	monthly	2	0	0	0	2	4	
	n/a	1	9	3	12	3	28	
	weekly	0	2	1	4	0	7	
Total		**3**	**14**	**5**	**17**	**5**	**44**	
Chewing gum after exams								
Variable	frequency		daily	monthly	n/a	weekly	Total	p=value
Chewing gum before exams		0	0	0	0	1	1	0.001
	daily	1	5	1	0	4	11	
	monthly	0	0	7	4	1	12	
	n/a	0	1	0	8	1	10	
	weekly	0	0	2	0	8	10	
Total		**1**	**6**	**10**	**12**	**15**	**44**	

The majority of participants do not participate in bad habits but the associations have revealed the following for those who engage in the bad habits: Significantly more participants bit on their nails weekly after exams as opposed to before exams, (p=0.001). Significantly more participants clenched daily and weekly after the exams as opposed to before exams, p=0.003. Significantly more participants grinded their teeth daily and weekly after the exams as opposed to before exams, p=0.001. Significantly more participants chewed unilaterally after the exams daily as opposed to before the exams and so did those who bit on objects and the same was observed for lip sucking, $p< 0.05$. As for cheek chewing more participants practised the behaviour monthly, weekly and daily as opposed to before the exams, $p< 0.05$. As for gum chewing significantly more chewed gum weekly followed by monthly and daily, p=0.001. This is also the only variable where in general those who chewed the gum exceeded those who didn't chew the gum. Significantly more participants yawned widely daily after exams than before exams, p=0.02.

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Table 5: Association between yawning and TMD (n=44)

	Yawn widely before exams						
		daily	monthly	n/a	weekly	Total	P value
TMD diagnosis	No	4	2	8	4	18	
	Yes	16	0	6	4	26	0.04
Total		20	2	14	8	44	
	Yawn widely after exams						
TMD diagnosis	No	2	4	9	3	18	
	Yes	12	1	8	2	26	0.02
Total		14	5	17	5	44	

There was found to be no association between year of study and gender in the engagement in bad habits as well the frequency before and after exams, p>0.05.

Association between TMD and yawning very wide is depicted in the table above.

Statistically more participants that yawn widely daily before and after exams are more likely to have a TMD diagnosis as opposed to those that yawns monthly or weekly, p=0.04 and 0.02 respectively. When the association between TMD diagnosis and other bad habits (grinding, chewing on objects, lip biting and sucking. etc.) was done there was found to be no association between TMD and bad habits, p > 0.05

Association between symptoms of TMD (clicks, myalgia, arthralgia, and myofascial pain) and examination (n=44) in the table below.

The presence of clicking, myalgia, myofascial pain and arthralgia are significantly associated with TMD, p=0.00, 0.01,0.01 and 0.04 respectively. The was also found to be no association between gender and year of study with TMD diagnosis, p>0.05.

Discussion

TMD are a complex set of disorders that can often lead to chronic pain. The major clinical presentation of these disorders is pain in the orofacial region of non-odontogenic origin. Since TMDs considerably affects daily functions and follow a biopsychosocial pattern of a disease, its prevention, early diagnosis, and therapeutic management are deemed necessary. In the modern era, studies are being carried out in varied population using Diagnostic Criteria for Temporomandibular Disorders (DC/TMD).[16-17]

In this study DC/TMD was used to diagnose TMD and determine its prevalence. Preparing and writing of the examination was the common psychosocial factor (Axis II) affecting the students.

A common observation made in the past studies was the majority of TMD among females and in the younger age groups. Previous studies have also pointed out the higher prevalence of TMD in university students, especially medical and dental undergraduates.[18-19] A high prevalence of 59 % was noted in this study. Interestingly, this prevalence remained the same even after the examinations. This suggests that either examinations were not the predisposing factor or examination and other factors such as clinical demands and complex curriculum also played a significant role in students

	Do you experience clicking sounds when chewing, opening, closing your mouth or yawning				
		No	Yes	Total	p=value
TMD diagnosis	No	18	0	18	
	Yes	11	15	26	0.00
Total		29	15	44	
	Experience of Myalgia				
		No	Yes	total	p=value
TMD diagnosis	No	16	2	18	0.01
	Yes	11	15	26	
Total		27	17	44	
	Experience of myofascial pain				
		No	Yes	Total	p=value
TMD diagnosis	No	16	2	18	
	Yes	14	12	26	0.01
Total		30	14	44	
	Experience of Arthralgia				
		No	Yes	Total	p=value
TMD diagnosis	No	18	0	18	
	Yes	21	5	26	0.04
Total		39	5	44	

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with TMD. The complex nature of dental curriculum and its presentation also pose increased amount of stress, anxiety, and distress for students.

The purpose of the study was to determine the association between self-reported harmful oral habits and the TMD related signs and symptoms amongst oral hygiene students at a training institution in Gauteng and the frequency of the students' engagement in harmful oral habits.

Previous studies employed only the TMD pain screener questionnaire with university students while other researchers used RDC/TMD for assessing the prevalence of TMD or used fonseca anamnestic index (FAI) in combination with various other questionnaires for classifying the TMD.[18,17,20] The present study has an edge over other studies in Saudi Arabia, as it is first of its kind which has evaluated the male and female oral hygiene undergraduates for TMD using Diagnostic Criteria for Temporomandibular Disorders (DC/TMD), although males were few.

The DC/TMD is a diagnostic framework that provide a systematic approach to the diagnosis of TMD, allowing clinicians to make more informed decisions about treatment.[21] The DC/TMD includes assessing the patient's symptoms and performing a clinical examination. During the clinical examination, the clinician looks for signs and symptoms that are consistent with TMD, such as tenderness in the jaw muscles, pain with jaw movement, clicking of the jaw, and altered range of motion.

The study by Srivastava conducted among undergraduates' dental students found the overall cross-sectional prevalence of TMD to be 36.99%.[20] Pain arising from the jaw, temple, and the peri-auricular area were the most commonly reported symptoms and elicited signs during examination.[20] Among the pain-related TMD, myalgia was the commonest diagnosed condition. Female and students in clinical academic levels were found to have significantly increased risk of TMD. Among the psychosocial parameters, anxiety and parafunctional behaviour were shown to increase the risk of developing TMD. Students with any TMD reported to have significantly higher pain intensity levels and jaw functional limitations.

Similar observation was reported by Zafar et al., wherein variation in the prevalence among the university students of different disciplines was found.[22] The dental students had experienced more TMD compared to the pharmacy and medical students. The prevalence was slightly higher in the female group compared to the male group. In a study by Larkin et al., the most reported symptoms were temporal headache neck pain and TMJ clicking among dental students.[23] Those reporting a higher number of parafunctional and jaw–strain-related habits were 1.6 times (95% CI 1.05, 2.42) more likely to exhibit at least one TMD sign or symptom. The most common parafunctional activities were teeth clenching (56.5%), grinding (36.1%), and chewing gum (35.4%). This study showed that the association between harmful oral habits and TMD was statistically significant.

Studies conducted regarding the risk assessment on oral parafunctions in relation to TMD discovered that the most prevalent reported oral parafunctional habits included: teeth clenching and grinding, nail biting and chewing gum sticks.[5,10]

However, a study conducted by Michelotti et al found that nail biting was not a risk factor for any of the TMD subgroups (men and women) analysed, despite the fact that incisal clenching has been reported to reduce anterior joint space and to determine disc compression.[14]

There is a growing body of evidence that suggest that there are gender differences in the prevalence and presentation of TMD in adult [17,18,23] For example, women are more likely than men to seek treatment for TMD, and they are also more likely to report higher levels of pain and disability. There are a number of possible explanations for these gender differences. It might be related to social factors, hormonal factors, differences in pain sensitivity, as well as health-seeking behaviours. However, our study showed there was no association between gender and prevalence of TMD in our participants before and after exams.

CONCLUSIONS

The present study showed a high prevalence of TMD which was associated some of the harmful oral habits. The study also showed that examinations is not the only psychosocial factor predisposing factor students to TMD as the prevalence was the same before and after the exams.

LIMITATIONS

This study was limited by the cross-sectional study design and causality cannot be inferred. Response acquiescence is common in questionnaires that tend to determine habits that are considered taboo or have negative connotations. The study is also limited by the small sample size of the oral hygienists with a skewed distribution between males and females.

RECOMMENDATIONS

Dental students including oral hygienists in previous studies and in our study were shown to pose a higher risk of developing TMD, hence strategies such as early diagnosis and management of TMD need to be implemented so that they could improve prognosis and quality of student life. Additionally, academic counselling should be planned to assist students to cope with academic activities especially during exam time.

CONFLICT OF INTEREST

The authors declare there are no conflicts of interest

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