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Original Research

An institutional survey for self- awarenessassessment of temporomandibular joint disorder symptoms prevailing in dental faculty, staff members & dental students in Government Dental College Srinagar

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ABSTRACT:

Aim: Assessment of self awareness of symptoms of temporomandibular joint disorders among the dental faculty, staff members & students (undergraduate UG & postgraduate PG). **Objective:** 1. Estimate the prevalence of temporomandibular joint disorders (TMDs) symptoms among dental faculty, staff members and students of the dental college. 2. To compare the prevalence of TMDs symptoms among the dental faculty, staff members and students. 3. To evaluate the prevalence of TMDs symptoms with respect to gender & age. **Materials and method:** A cross-sectional questionnaire based blind study was conducted among the faculty members, dental staff and dental students (UG & PG) in Govt Dental college Srinagar. Questionnaires were distributed to 220 subjects out of which only 150 subjects completed the study. Results were collected and analysed statistically. **Results:** TMD symptoms are more commonly present in the age group of 27-34 years (46.7%) and postgraduate students have more TMD symptoms compared to undergraduate students, dental staff & faculty. Females shows significantly higher TMD symptoms 52.8% compared to males 31.14% (p value 0.049). **Conclusion**: There is a high prevalence of TMD symptoms in dental students (UG&PG), staff & faculty, with female predominance. Postgraduate students are more afflicted with TMDs symptoms as compared to UG students, faculty & staff. Further studies with increased sample size need to conducted to identify risk factors associated with TMD in order to establish measures for prevention and treatment.

Key words: Institutional survey, temporomandibular disorders, temporomandibular joint.

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INTRODUCTION

Temporomandibular joint (TMJ) is a complex, bi-arthrodial, synovial joint connecting the mandible and temporal bone by muscles, ligaments and tendons.[1]

American Dental Association in 1983 defined TMD as a group of orofacial disorders characterized by pain in the preauricular area, TMJ, or muscles of mastication, limitations and deviations in the mandibular range of motion, TMJ sounds during functions of jaw.[2]

TMD has complex etiology with biomechanical, neuromuscular, biopsychosocial, biological components.[3]

Incidence of TMDs ranges from 21.5% to 50.5%.[4]Occurs with peak incidence at 20 to 40 years and female predilection of 2:1.[5]

TMD considered as a common type of non-odontogenic orofacial pain.[6]Dahlstrom and Carlsson observed its high impact on oral health-related quality of life.[7]

Literature shows high prevalence of TMD in dental students.[8]No study has been done regarding the prevalence in Govt dental college & hospital Srinagar. Hence, this questionnaire study done with following aims & objectives.

AIM

Assessment of symptoms of temporomandibular disorders among the dental faculty, staff members & students (UG&PG).

OBJECTIVES

1. Estimate the prevalence of temporomandibular joint disorders (TMDs) symptoms among dental faculty, staff members and students (undergraduate & postgraduate) of the dental college.
2. To compare the prevalence of TMDs symptoms among dental faculty, staff members and students (UG&PG) of the dental college.
3. To evaluate the prevalence of TMDs symptoms with respect to gender & age.

MATERIALS & METHODS

ETHICAL APPROVAL

The study was approved by the Institutional Review Board (IRB), vide letter no. Prostho/GDC/5416132, on 8-2-2021 and followed all the recommendations of Helsinki Declaration. (Annexure A)

STUDY DESIGN

A cross-sectional questionnaire (Annexure B) based blind study was conducted among the dental faculty, staff and students (UG & PG) in Govt. dental college and hospital Srinagar.

- A written informed consent was taken upon enrolment.
- All the participants were thoroughly explained about the questionnaire and were requested to choose the option as yes or no as per their assessment of symptoms related to TMDs
- Personal data like name which reveals the identity was not recorded in the study.
- Serial no. was marked on the questionnaire like s.no.-1 to 220.

S.no. 1—100 was distributed to undergraduate students and from 101-155 to postgraduate students and from 156- 220 to dental faculty and staff.

SAMPLE SIZE ESTIMATION

Total 220 questionnaires were distributed to subjects, however based on underlying inclusion criteria, only 150 participants enrolled for the study. The enrolled sample size was re-evaluated to access the feasibility of the study using G Power (power =0.80, $\alpha = 0.05$ and effect size = 0.2.) 3.0.10 software, v 3.0.10; Franz Faul, Kiel University, Kiel, Germany. All the 150 participants completed the study.

INCLUSION CRITERIA

1. Faculty members, staff and students (both UG& PG) of dental college.
2. Both male and female were included.
3. Age range 18- 60yrs.
4. Participants signed a consent form agreeing to participate in the study.

EXCLUSION CRITERIA

1. Age above 60 yrs.
2. Any participants who wished to opt out of the study during the period of study.

STATISTICAL ANALYSIS

The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). Continuous variables were expressed as Mean± SD and categorical variables were summarized as frequencies and percentages. Chi-square test or Fisher's exact test, whichever appropriate, was applied for comparing categorical variables. A P-value of less than 0.05 was considered statistically significant. All P-values were two tailed.

RESULTS

The distribution of study subjects based on age, gender & designation is showed in table 1. In this study 89 (59.3%) were females and 61 (40.7%) were male. Study comprises of undergraduates 67 (44.7%), postgraduates 39 (26.0%), dental staff 28 (18.7%) & faculty members 16 (10.7%). The mean age of subject was 26.2±5.22 years (18-42).

Table 1: Demographic characteristics of study subjects

		Number	Percentage
Age (Years)	18-26	81	54.0
	27-34	60	40.0
	35-42	9	6.0
	Mean ± SD (Range)	26.2±5.22 (18-42)	
Gender	Male	61	40.7
	Female	89	59.3
Designation	UG	67	44.7
	PG	39	26.0
	Staff	28	18.7
	Faculty	16	10.7

Among the 150 subjects, 61 (40.7%) have symptoms of TMDs. (Table 2)

Table 2: Prevalence of TMD symptoms based on subjects response to questionnaire

TMD Symptoms	Number	Percentage
Present	61	40.7
Absent	89	59.3
Total	150	100

The symptoms of TMD are highest in the age group 27-34 years (46.7%) and significantly higher in females 52.8%. Based on designation TMD symptoms are prevalent inpostgraduates student (53.8%).(Table 3).

Table 3: Prevalence of TMD symptoms as per age, gender and designation based on subjects response to questionnaire

Variable		No. of Subjects	TMD Symptoms		P-value
			N	%age	
Age (Years)	18-26	81	30	37.0	0.463
	27-34	60	28	46.7	
	35-42	9	3	33.3	
Gender	Male	61	19	31.14	0.049*
	Female	89	47	52.8	
Designation	UG	67	25	37.3	0.262
	PG	39	21	53.8	
	Staff	28	10	35.7	
	Faculty	16	5	31.3	

***Statistically Significant (P-value<0.05)**

Distribution of study subjects according to the presence of symptoms of TMD reported in questionnaire based on gender shown in Table 4.In our study most prevalent symptom is joint noise, reported in 18% subject (21F&6M) and significantly higher in females, followed by neck pain. 15.3% subjects (16F&7M), value is not significant for other symptoms in relation to gender.

Table 4: Genderdistribution of study subjects according to the presence of TMD symptoms reported in the questionnaire

		Male		Female		Total		P-value
		No.	%age	No.	%age	No.	%age	
Q1	Yes	59	96.7	84	94.4	143	95.3	0.505
	No	2	3.3	5	5.6	7	4.7	
Q2	Yes	1	1.6	2	2.2	3	2.0	0.794
	No	60	98.4	87	97.8	147	98.0	
Q3	Yes	0	0.0	4	4.5	4	2.7	0.093
	No	61	100	85	95.5	146	97.3	
Q4	Yes	2	3.3	4	4.5	6	4.0	0.709
	No	59	96.7	85	95.5	144	96.0	
Q5	Yes	6	9.8	21	23.6	27	18.0	0.031*
	No	55	90.2	68	76.4	123	82.0	
Q6	Yes	3	4.9	4	4.5	7	4.7	0.904
	No	58	95.1	85	95.5	143	95.3	
Q7	Yes	1	1.6	2	2.2	3	2.0	0.794
	No	60	98.4	87	97.8	147	98.0	
Q8	Yes	1	1.6	0	0.0	1	0.7	0.226
	No	60	98.4	89	100.0	149	99.3	
Q9	Yes	0	0.0	4	4.5	4	2.7	0.093
	No	61	100	85	95.5	146	97.3	
Q10	Yes	0	0.0	2	2.2	2	1.3	0.239
	No	61	100	87	97.8	148	98.7	
Q11	Yes	2	3.3	6	6.7	8	5.3	0.454
	No	59	96.7	83	93.3	142	94.7	
Q12	Yes	2	3.3	2	2.2	4	2.7	0.701
	No	59	96.7	87	97.8	146	97.3	
Q13	Yes	7	11.5	16	18.0	23	15.3	0.278
	No	54	88.5	73	82.0	127	84.7	

Q14	Yes	5	8.2	9	10.1	14	9.3	0.692
	No	56	91.8	80	89.9	136	90.7	
Q15	Yes	2	3.3	4	4.5	6	4.0	0.709
	No	59	96.7	85	95.5	144	96.0	

***Statistically Significant (P-value<0.05)**

Distribution of study subjects according to the presence of symptoms of TMD based on age is shown intable 5. Joint noiseis the most common symptom and is maximum in the age group 27-34 years (25%), followed by 18-26 years (13.6%) and least in the 35-42 years (11.1%). Neck pain is common in 18 -26 years age group (16.0%) compared to 27-34 (15%) and 35-42 (11.1%) years.All the symptoms of TMD in relation to age shows no statistically significant correlation.

Table 5: Age distribution of study subjects according to the presence ofTMDsymptomsreported in the questionnaire

		18-26 Years		27-34 Years		35-42 Years		P-value
		No.	%age	No.	%age	No.	%age	
Q1	Yes	76	93.8	58	96.7	9	100	0.579
	No	5	6.2	2	3.3	0	0.0	
Q2	Yes	2	2.5	0	0.0	1	11.1	0.077
	No	79	97.5	60	100	8	88.9	
Q3	Yes	4	4.9	0	0.0	0	0.0	0.174
	No	77	95.1	60	100	9	100	
Q4	Yes	4	4.9	2	3.3	0	0.0	0.730
	No	77	95.1	58	96.7	9	100	
Q5	Yes	11	13.6	15	25.0	1	11.1	0.187
	No	70	86.4	45	75.0	8	88.9	
Q6	Yes	6	7.4	0	0.0	1	11.1	0.076
	No	75	92.6	60	100	8	88.9	
Q7	Yes	1	1.2	1	1.7	1	11.1	0.130
	No	80	98.8	59	98.3	8	88.9	
Q8	Yes	0	0.0	1	1.7	0	0.0	0.471
	No	81	100	59	98	9	100	
Q9	Yes	1	1.2	3	5.0	0	0.0	0.342
	No	80	98.8	57	95.0	9	100	
Q10	Yes	2	2.5	0	0.0	0	0.0	0.422
	No	79	97.5	60	100	9	100	
Q11	Yes	4	4.9	4	6.7	0	0.0	0.691
	No	77	95.1	56	93.3	9	100	
Q12	Yes	3	3.7	1	1.7	0	0.0	0.667
	No	78	96.3	59	98.3	9	100	
Q13	Yes	13	16.0	9	15.0	1	11.1	0.923
	No	68	84.0	51	85.0	8	88.9	
Q14	Yes	6	7.4	8	13.3	0	0.0	0.299
	No	75	92.6	52	86.7	9	100	
Q15	Yes	2	2.5	4	6.7	0	0.0	0.371
	No	79	97.5	56	93.3	9	100	

According to the designation, symptoms of TMDs is shown in table 6. Joint noise/clicking sound is significantly common in PG students (35.9%), followed by UG students (13.4%), faculty (12.5%) and least in staff (7.1%). Neck pain is more common in the staff (28.6%) followed by UG students (14.9%), Faculty (12.5%) and least in PG students (7.7%).

On reviewing the literature no comparison study, between dental staff and faculty regarding the TMDs was found.

Table 6: Designation distribution of study subjects according to the presence of TMD symptomsreported in questionnaire

		Group – I				Group -II Staff		Group -III Faculty		P-value
		UG		PG						
		No.	%age	No.	%age	No.	%age	No.	%age	
Q1	Yes	63	94.0	37	94.9	27	96.4	16	100	0.769

	No	4	6.0	2	5.1	1	3.6	0	0.0%	
Q2	Yes	2	3.0	0	0.0	0	0.0	1	6.3	0.366
	No	65	97.0	39	100	28	100	15	93.8	
Q3	Yes	4	6.0	0	0.0	0	0.0	0	0.0	0.165
	No	63	94.0	39	100	28	100	16	100	
Q4	Yes	3	4.5	1	2.6	2	7.1	0	0.0	0.651
	No	64	95.5	38	97.4	26	92.9	16	100	
Q5	Yes	9	13.4	14	35.9	2	7.1	2	12.5	0.007*
	No	58	86.6	25	64.1	26	92.9	14	87.5	
Q6	Yes	6	9.0	0	0.0	0	0.0	1	6.3	0.105
	No	61	91.0	39	100	28	100	15	93.8	
Q7	Yes	1	1.5	1	2.6	0	0.0	1	6.3	0.532
	No	66	98.5	38	97.4	28	100	15	93.8	
Q8	Yes	0	0.0	1	2.6	0	0.0	0	0.0	0.413
	No	67	100	38	97.4	28	100	16	100	
Q9	Yes	1	1.5	3	7.7	0	0.0	0	0.0	0.147
	No	66	98.5	36	92.3	28	100	16	100	
Q10	Yes	2	3.0	0	0.0	0	0.0	0	0.0	0.473
	No	65	97.0	39	100	28	100	16	100	
Q11	Yes	4	6.0	3	7.7	0	0.0	1	6.3	0.554
	No	63	94.0	36	92.3	28	100	15	93.8	
Q12	Yes	3	4.5	1	2.6	0	0.0	0	0.0	0.561
	No	64	95.5	38	97.4	28	100	16	100	
Q13	Yes	10	14.9	3	7.7	8	28.6	2	12.5	0.131
	No	57	85.1	36	92.3	20	71.4	14	87.5	
Q14	Yes	6	9.0	7	17.9	1	3.6	0	0.0	0.103
	No	61	91.0	32	82.1	27	96.4	16	100	
Q15	Yes	2	3.0	4	10.3	0	0.0	0	0.0	0.112
	No	65	97.0	35	89.7	28	100	16	100	

***Statistically Significant (P-value<0.05)**

DISCUSSION

The term Temporomandibular disorders include changes in the TMJ, masticatory muscles, teeth and associated structures. It affect large part of the population with various signs and symptoms like muscle pain, TMJ pain, joint noises, restricted mouth opening, inadequate occlusion, auditory disorders, headache, reduced mouth opening, sound in the TMJ etc. The variation in the presence of symptoms among different patients and in the same patient at different times make the diagnosis of this clinical entity difficult.[8]

This study evaluate the prevalence of TMD symptoms among the undergraduate students, post graduate students, dental staff and faculty. In our study40.7% subject have symptoms of TMDs, which is similar to the result of Hegde S. et al[9] (48%) and Modi P et al[10] (45.6%). However study by Muthukrishnan A. et al[11] shows TMD symptoms in 53.7% subjects.

In our study TMD symptoms are significantly higher in females 52.8% as compared to males 31.14% (p-value 0.049). Similar female predilection for TMD symptoms is found in study of Muthukrishnan A. et al [11](59%) and Kaushal P et al [12] (19%).Female are more prone to stress and anxiety, also presence of estrogen receptor in TMJ of female is implicated, as endogenous estrogen affects the remodelling processes within the TMJ probably by changing the extracellular matrix in the joint or by changing the bone volume. Such changes can result in internal derangement of the TMJ.Chalkoo AH[13] found that TMD symptoms common in females of reproductive age group (20-40 years) than the postmenopausal females, also the former has a higher estrogen level than later.

The symptoms of TMD are highest in the age group 27-34 years (46.7%) followed by the age group 18-26 years (37.0%) and least in age group of 35-42 year (33.3%), whereas in Sachdeva A. et al[3] study, TMDs symptoms were more common in age group of 17-26 years (30.7%) followed by 27-36 years (22.8%).

In this study, TMD symptoms are more prevalent in postgraduates (53.8%) as compared to undergraduate students (37.3%), dental staff (35.7%), & faculty (31.3%).Study done by Kaushal P[12] and Choudhary SH also showshigher prevalence of TMD symptoms amongPG than UG students.[14]It may be due to increased level of stress. Ahuja V [15] in his study found that postgraduate students have higher stress levels than undergraduate students.

Present study shows difficulty in mouth opening in 7 subjects (4.7% ,5F & 2M),&common in 18-26 years age group (6.2%), followed by 27-34 years (3.3%) and least in 35-42 years (0.0%), whereas it is 11.4%

in study of Muthukrishnan A et al [11]&more common in > 50 years of age.

2% subjects (2F &1M) have Pain on mouth opening, similar to result ofMuthukrishnan A etal[11] (2.3%). Pain on mouth opening is more prevalent in 35-42 years (11.1%) as compared to 18-26 years (2.5%) which is similar to study of Sachdeva A. et al.[3]

Joint pain/muscle pain is found in 2.7% subjects (4 female) &seen in 18-26 years group (4.9%) and absent in other groups whereas in Muthukrishnan A. et al [11] it is common in 31-50 years age group.

In our study Joint noise while opening & closing the jaw is the most common symptomreported in 18% subject (21F&6M) which is 36 % in the Hegde S [9] study. Joint noise is maximum in the age group 27-34 years (25%), followed by 18-26 years (13.6%) and least in 35-42 years (11.1%), whereas in Matsuka Y [16] study it is common in age of 29-30 years (35.0%).Joint sounds was significantly higher in females than males in study of Farsi NM [17], our study show similar prevalence in females but the p-value is not significant.

Stiffness of the facial muscles and mouth opening difficulty after awakening in the morning is seen in 4.7% subject (4F& 3M), which is 12% in Banerjee A study.[8]Facial muscles stiffness is more in 35-42 year age group (11.1%) as compared to 18-26 year (7.4%), and 27-34 years (0.0%), results are similar to the study of Goulet JP [18] where 35-54 years age group shows muscle stiffness.

In our study, Locked jaw is seen in 2% (2F&1M) subjects which is in accordance to Hegde S. (3.5%)[9] and Rani S et al (1 %).[7]Locked jaw is more in older age groups i.e. 11.1% in 35-42 year group, 1.7% in 27-34 year group & 1.2% in 18-26 years.

Deviation/ deflection of jaw while opening the mouth is reported in 2.7% subject (4F)&is more common in the 27-34 years age group (5.0%) as compared to 18-26 years (1.2%) and 35-42 years (0.0%), whereas in Muthukrishnan A et al[11] study it is 42.1% in and more in older age (> 50 years).

In our study 5.3% subjects (6F&2M) noticed TMD problems following dental treatment, whereas in Banerjee A [8] study, 12% subjects had undergone prior orthodontic treatment. History of trauma to jaw/head & neck was found in 2.7% subjects (2F&2M), However it is higher in (12.99%) in Chuang SY [19] study.

Neck pain was present in 15.3% subjects (16F&7M), which is 11% in Hegde S [9]study, 81% in Bragatto MM [20] study with associated pain in muscles around the ear. Neck pain is common in 18 -26 years age group (16.0%) compared to 27-34 (15%) and 35-42 (11.1%) years.

Pain in other joints of the body was seen in 9.3% (9F&5M) subjects, whereas in Bonato LL[21] study it was 90.9%. Pain in other joint is more common in 27-34 years age group (13.3%) followed by the 18-26 years (7.4%) and absent in the 35-42 years age group.

In our study, 4% subjects (4F&2M) have taken treatment for TMDs, however in Banerjee A [8] study 8% have taken treatment.

In our study, Limitation of mouth opening more commonly present in UG students (6%) as compared to PG students (5.1%), staff (3.6%) and faculty (0.0), whereas pain while opening of mouth was more common in faculty (6.3%) as compared to UG students (3%), PG students (0.0%) & staff (0.0.%). 6% of UG students have pain in the joint/muscle while chewing food whereas in Kaushal P et al[12] study it was more in PG students. Pain in and around the ear/eye was common in staff (7.1%) as compared to UG students (4.5%), PG students (2.6%) & faculty (0.0%), whereas it was common in PG students then UG students in Kaushal P et al study.[12] Joint noise/clicking sound is significantly common in PG students (35.9%), followed by UG students (13.4%), faculty (12.5%) and least in staff (7.1%). Kaushal P et al[12] study also have joint noise prevalence in PG students. On reviewing the literature no comparison study, between dental staff and faculty regarding the TMDs was found.

Parafunctional habits also have role in TMDs. Bruxism (67%) was found to be more frequent parafunctional habit by Fale H, et al[22] whereas Melchior MO et al [23], found teeth clenching followed by grinding more commonly associated with TMDs.

Many psycho-neuro-immunological diseases and disorders mimic the symptoms of TMDs including Fibromyalgia syndrome, Chronic fatigue syndrome, Chronic depression, Irritable bowel syndrome, Premenstrual syndrome in women. The differentiation of these disorders is important for diagnosing the cause of TMJ pain and treating it effectively to benefit the patient.[24] Korszun et al [25]found strong clinical association between TMDs and Fibromyalgia and Chronic fatigue syndrome. The clinical overlap between these conditions is because of a common underlying pathophysiologic basis involving dysregulation of the hypothalamic-pituitary-adrenal stress hormone axis in predisposed individuals. Thus muscular TMDs can be part of a generalized pain syndrome.

LIMITATIONS AND FUTURE PROSPECTS

Study sample size was small with unequal number of subjects in relation to gender, age and designation. Moreover, variables like parafunctional habits and severity of signs and symptoms of TMD were not included in the questionnaire.

Since the study outcome is based on subjects understanding, correlation & awareness of TMDs and is nonconfirmatory due to absence of clinical examination therefore the subjects response to the questionnaire may be false negative or false positive as well which inturn may influence the overall results.

Further studies with larger sample size to compare TMDs within different age groups, including the geriatric age group and detailed clinical examination & evaluation of the signs and symptoms of the TMDs and psychosocial and psychiatric assessment is recommended in order to achieve specific results.

CONCLUSION

Based on the results presented above, it was concluded that there is high prevalence of TMD symptoms in dental students (UG&PG), staff & faculty, with female predominance. Symptoms were particularly high in postgraduate students. Further studies need to be conducted to identify risk factors associated with TMDs in order to establish measures for prevention and treatment.

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Nil.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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