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Association between stress and temporomandibular disorders among medical professionals of Udaipur city, India

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Abstract

Temporomandibular joint is a synovial joint of an ellipsoid variety and a joint that hinges the lower jaw to the temporal bone of the skull. Any hindrance with jaws and muscles of face which control temporomandibular joint are known as temporomandibular disorders (TMD)

Objective: To assess the association of temporomandibular dysfunction and perceived stress among medical professionals of Udaipur city.

Materials and Methods: A cross sectional Questionnaire study was conducted amongst medical professionals of Udaipur City. A List was prepared regarding all medical colleges of Udaipur city, out of six medical colleges one was selected randomly which was pacific institute of medical sciences. Medical professionals with MBBS/MD/MS/DNB Degree and those who were willing to participate are included in the study whereas subjects suffering from Rheumatoid arthritis, any previous history of surgery in maxillofacial area, showing signs and symptoms of TMD, any history of trauma in maxillofacial area, were excluded from the study. Questionnaire was based on fonseca's TMD assessment scale given by Fonseca in 1992 and perceived stress scale by S.Cohen in 1983, both scale consisted of 10 questions each.

Results: A total of 400 subjects participated out of which only 3.5% medical professionals were having severe TMDs. A total of 58.8% subjects were having moderate level of stress whereas none of the participants were having HIGH stress levels. Few Subjects were having Mild TMD (22.5%) to which (58.8%) were found to have Moderate stress levels.

Keywords: Temporomandibular disorder, stress, medical professionals

Introduction

Temporomandibular joint is a synovial joint of an ellipsoid variety and a joint that hinges the lower jaw to the temporal bone of the skull. Any hindrance with jaws and muscles of face which control temporomandibular joint are known as temporomandibular disorders (TMDs). In TMD, the synovial joint capsule and surrounding musculature are highly vascularized, innervated and are thought to be most common location of pain in TMJ disorders^[1].

The exact cause of TMD is not known but it is considered to be multifactorial. Factors such as Rheumatoid arthritis, Osteoarthritis, Jaw injury, chronic grinding of teeth, certain connective tissue diseases, fear and stress are few factors which can lead to temporomandibular disorder.

Stress can be defined as the degree to which you feel overwhelmed or unable to cope as a result of pressures that are unmanageable^[2]. Various jobs and occupations such as airline pilot, Event-coordinator as well as medical professionals are linked directly or indirectly with stress. All types of stress can lead to TMJ dysfunction, tightness in joint along with mild popping or clicking sounds, alteration in jaw movements and existing disorder can cause the worst symptoms^[3].

Medical professionals are not completely adopted at handling the stress. Medical jobs are more stressful than other jobs. Numerous factors contribute to job stress in medical careers which includes - Long hours, including night shifts even during weekends, understaff facilities, high

patient volume, dealing with ill patients and their families, Declining reimbursements cases, Difficulty in making life altering decisions due to lack of time.

Medical professionals are highly pressurized, difficult environment since starting of their medical career. Medical professionals have grown into highly demanding and competitive profession where students have to take theoretical as well as clinical knowledge which directly pulls them towards physical, mental as well as emotional stress^[2].

Keeping the above factors in mind study was conducted with an objective to assess the association of temporomandibular dysfunction and perceived stress among medical professionals of Udaipur city, India.

Methods

Study design, study population and study area

A cross sectional study was conducted amongst medical professionals of Udaipur city during the month of March 2019.

Ethical approval & official permission

The study protocol was reviewed by the ethical committee of Pacific Dental College and Hospital and was granted ethical clearance. An official permission was taken before conducting the study from the principal of pacific institute of medical sciences, Umarda, Udaipur.

Informed consent:

All the subjects who agreed to participate in the study were requested to give written consent prior to the beginning of the study.

Inclusion criteria

- Subjects who are not suffering from rheumatoid arthritis and septic arthritis
- Participants who were willing to participate in the study.
- Subjects who are in a fit state of Mind to fill up questionnaire.

Exclusion criteria

- Subjects with any previous history of surgery to maxillofacial area.
- Subjects with any history of trauma to the maxillofacial area.
- Subjects with history of connective tissue disorders

Questionnaire

Fonseca's questionnaire given by Brazilian Portuguese Fonseca consisting of 10 questions to determine TMD assessment scale was used. Perceived stress scale given by S. Cohen in 1983 which consisted 10 questions for assessment of Stress levels. Response were based on five points LIKERT'S SCALE with response ranging from Never to Very often in perceived stress scale and response consisting of NO, SOMETIMES and YES in TMD assessment scale.

Pretesting survey: The assessment of content validity in the questionnaire was related to the opinions expressed by a group of six panelist (Panel of academician and postgraduate). Mean content validity ratio (CVR) was calculated as 0.8. Content validity identifies whether the measures represents all the facets of a given construct.

Face validity, which describes whether the test "looks valid" to the examinees who take it, the administrative personnel who decide on its use, and other technically untrained observers was assessed by administering the questionnaire to

twelve subjects who were asked to rate the questionnaire on a Likert's scale. Chi-square test was applied, and it was observed that 90% of the participants found the questionnaire to be easy ($P < 0.05$). Criterion validity was also assessed and found to be satisfactory (Cronbach's alpha 0.88)

The questionnaire was further pretested to assess its feasibility and reliability which were found to be satisfactory. Test of reliability comprised of two components: question-question reliability which was assessed by the percentage of agreement (90%) and internal reliability for the responses to questions which was assessed using Cronbach's alpha (0.84). All necessary changes were introduced in the main study.

Methodology

A List was prepared regarding all medical colleges of Udaipur city. There were six medical colleges, out of six medical colleges one college was selected randomly which was pacific institute of medical science. A team of investigators visited Medical College and approached all medical professionals.

Those willing to participate were requested to fill in the consent form and complete the questionnaire. Participants were asked to rate each item of scales and choose the most appropriate response. Ample time was given to them to fill the questionnaire and any queries which the medical professionals had were clarified by the investigators. All the questionnaires were collected and checked carefully for their completeness. Frequent visits were made to collect questionnaire with multiple follow up to ensure all the questionnaire were filled properly without missing any questions.

Statistical Analysis: Data entry was done in Excel sheet further carried out by a descriptive analysis using SPSS 20 software.

Results

Table 1 shows Distribution of study participants according to age and gender. A total of 400 medical professionals took part in the study. Maximum subjects were between age of 32-34 and minimum subjects were between 24-27 years of age. Male participants were more than female participants by 59% in this study.

Table 2 shows Frequency of temporomandibular dysfunction and stress among study participants. Maximum subjects (n=282)70.5% were not having any temporomandibular disorder. Participants with (n=90)22.5% were found to have mild TMD, whereas equal number of participants n=14(3.5%) were having moderate and severe TMD. Subjects with n=165(41.3%) were having low stress whereas n=235(58.8%) were having high stress and none of the study participants were under high level of stress.

Table 3 shows Comparison of mean TMD and Stress according to age and gender. There was a significant result in comparison to stress and gender.

Table 4 shows distribution of study participants according to signs and symptoms of stress. As per perceived stress scale, overall, 73.6% subjects were under low stress levels out of which males were having low amount of stress compared to females by 15%. None of the medical professionals were under high stress. Maximum of participants aged between 28-31, n=71(67.6%) were found to have moderate level of stress.

Table 5 shows distribution of study participants according to signs and symptoms of temporomandibular dysfunction. As per Fonseca's TMD'S assessment scale maximum subjects above 40 years of age were not having any TMD'S whereas

same age criteria were under severe TMD n=7(6.1). From female subjects 8.5% were having severe TMD'S whereas only 2.2% of male subjects were having severe TMD'S. NO severity regarding TMD'S was found among subjects aged between 24-31. Participants aged between 24-27 years and 28-31 years were having mild TMD'S by 38.95 and 28.6% respectively.

Table 6 shows correlation between temporomandibular dysfunction and stress which showed there is a significant correlation between TMD and stress.

Table 7 shows Association between Stress and TMD among study population among study participants, Maximum medical professionals without any TMD were found to have moderate level of stress n=39(55.3%), whereas equal number of participants with moderate and severe level of TMD

disorders were going through same level of stress.

Table 1: Distribution of study participants according to age and gender

Variables	Frequency (n)	Percentage (%)
Age		
24-27	36	9.0
28-31	105	26.3
32-34	144	36.0
>40	115	28.7
Gender		
Male	318	79.5
Female	82	20.5
Total	400	100

Table 2: Frequency of temporomandibular dysfunction and stress among study participants

Temporomandibular dysfunction	Frequency (n)	Percentage (%)
No TMD	282	70.5
Mild TMD	90	22.5
Moderate TMD	14	3.5
Severe TMD	14	3.5
Stress		
Low	165	41.3
Moderate	235	58.8
High	0	0

Table 3: Comparison of Mean TMD and Stress with Age and Gender

Variables	Temporomandibular dysfunction Mean±SD	Stress Mean±SD
Age		
24-27	11.67+/- 11.83	13.78+/-3.06
28-31	16.48+/-15.45	14.90+/-5.65
32-34	19.97+/-19.57	15.38+/-3.65
>40	16.96+/-17.71	14.07+/-4.45
p-value	0.06	0.06
Gender		
Male	17.30+/-16.80	14.33+/-4.61
Female	17.99+/-20.18	16.28+/-3.47
p-value	0.6	<0.01

Table 4: Distribution of perceived stress among study participants according to age and gender of stress.

Variables	Perceived stress scale						p-value	
	Low stress		Moderate stress		High stress			Total
	f	%	f	%	f	%	f	%
Age								
24-27	22	61.1	14	38.9	0	0	36	100
28-31	34	32.4	71	67.6	0	0	105	100
32-34	54	137.5	90	62.5	0	0	144	100
>40	55	47.8	60	52.2	0	0	115	100
Gender								
Male	144	44.3	177	55.7	0	0	318	100
Female	24	29.3	58	70.7	0	0	82	100

Table 5: Distribution of TMD fonseca's scale among study participants according to the age and gender.

Variables	TMD-Fonseca								Total		p-value
	No TMD		Mild TMD		Moderate TMD		Severe TMD		F	%	
	f	%	F	%	f	%	f	%	F	%	
Age											
24-27	22	61.1	14	38.9	0	0	0	0	36	100	
28-31	68	64.8	30	28.6	7	6.7	0	0	105	100	
32-34	99	68.8	31	21.5	7	4.9	7	4.9	144	100	
>40	93	80.3	15	13.0	0	0	7	6.1	115	100	
Gender											
Male	221	69.5	76	23.9	14	4.4	7	2.2	318	100	
Female	61	74.4	14	17.1	0	0	7	8.5	82	100	

Table 6: Correlation between temporomandibular dysfunction and stress

	Perceived stress scale (r)	p-value
Temporomandibular dysfunction	0.521	<0.01

Table 7: Association between Stress and TMD among study population

Stress	TMD				P Value	Total
	No TMD	Mild	Moderate	Severe		
Low	126 (44.7%)	156 (43.3%)	0	0	0.000096	282
Moderate	39 (55.3%)	51 (56.7%)	14 (100%)	14 (100%)		118
High	0	0	0	0		0
Total	165	207	14	14		400

Discussion

Being a multifactorial disease affecting the stomatognathic system, TMD is influenced by many factors which includes elevated anxiety levels, symptoms of depression and psychological stress.

The rationale of conducting the present study on medical professionals was due to fact that medical professionals are more prone to stress, compared to other jobs or professionals. The present study showed maximum participants were males which was also in accordance with study results of Subhas *et al.* (2014) [3].

The present study showed that 22.5% and 3.5% of the study participants revealed mild and moderate TMDs respectively which was in contrast with the study results of Samar O *et al.* (2018) [4] in which 31.4% showed moderate TMDs.

This disparity of the study results might be attributed to the fact that present study has been conducted in larger sample size and consisted of all specialties of medical profession as compared to the study conducted by Samar O *et al.* [4]. Where only Physicians were taken into consideration.

The present study revealed that maximum of females (70.7%) have experienced moderate stress levels as compared to males which was in parallel to the study results of Preethi Menon *et al.* (2018) [5] contributing to the fact that females are easily susceptible to different types of stress like -financial, professional, personal life stress and inability to maintain proper balance between their personal as well as professional life which can lead to stressful life when compared to males.

The present study results also illustrated that level of stress decreased with the advancing age which can be attributed to the fact that as the age advances, it brings more of experience and ability to handle the situations in systematic way. This was in parallel to the study research conducted by Raydelane *et al.* (2017) [6].

Thus, Final diagnosis of patient's at risk is important because it is not possible to request patient's with psychiatric stress with TMD. It is almost impossible to have improvements by physical treatment. Early psychological stress evaluation in patients at risk can increase the success of therapeutic intervention [7].

Conclusion

There is a significant positive correlation Between Temporomandibular disorders and stress levels among the Medical Professionals.

Certain reasons can be peer Pressure since starting of their MBBS phase and at present situation most of Medical Professionals are unable to maintain proper balance between their personal Life As Well as Professional life, which leads to stressful life and effects physically as well as mentally.

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