RISK FACTORS FOR TEMPOROMANDIBULAR DISORDERS SYMPTOMS IN PRIVATE CLINICS PATIENTS AT PESHAWAR

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ABSTRACT

Objective: *To determine the dental, socioeconomic & psychological and neuromusculoskeletal risk factors for the TMDs symptoms in the patients reporting at private clinics.*

Materials and Methods: *This cross sectional descriptive research endeavor was undertaken from July to December 2019 of the total 161 sampled subjects at four selected private Dental Clinics of district Peshawar. The sample size was determined through Yamane technique and according to a pre-set inclusion criteria. A pretested prescribed Proforma was designed to investigate different parameters of the study. This includes Socioeconomic, Neuromuscular and Dental factors. Intra-oral examinations were carried out at dental chair with good examination. The data was analyzed by using SPSS version 23.*

Results: *Out of the total 161 Participants, 107 were Female and 54 were Male with a range of 18- 30 years age. The severity level of TMD risk factors was higher in female and younger participants (20 to 23 years). However, assessing the risk factors, 74% had socioeconomic & psychological, 34.3% dental and 32.2% reported with neuromuscular factors. The socioeconomic & psychological risk factors was reported significantly high among the all risk factors for TMD as evident by p value = 0.000.*

Conclusion: *The highest role for development of TMD was found to be played by the socioeconomic & psychological risk factors.*

Keywords: *Temporomandibular Disorders, Neuromuscular, Socioeconomics and Psychological*

INTRODUCTION

Pain along with other relevant signs and symptoms of the temporomandibular joint disorder (TMD) usually entails a person for seeking appropriate treatment. After chronic low back pain, TMD has been termed as the second most common musculoskeletal condition.[1] However the etiology of TMD has been termed as mutlifactorial, encompassing a wide range of contributing factors like occlusal interferences, trauma, biomechanical, psychosocial,and demographic.[2,3,4,5] Collectively all these may be grouped into predisposing, initiating and aggravating factors in order to appreciate their role in TMDs.[6]

Several studies are available focusing on and highlighting the status of multiple risk factors contributing to the TMDs. Considering the role of various dental risk factors contributing to TMD, studies have suggested occlusal therapy as a therapeutic measurement for treatment of various TMDs perpetuated by occlusal disharmony.[7,8] However, from perspective of occlusal interferences, variations may exist for each individual case emphasizing the multifactorial and interplay of its causative factors.

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This also implies to broaden the perspective of TMD treatment rather than merely to focus on elimination of local causative factors.[9] Notwithstanding, as the etiology of TMD and its pathogenesis is poorly comprehended therefore its treatment remains a challenge and a bit difficult.[10]

One of the attributes of TMD is the socioeconomic condition, where according to the conclusion of a study this risk factor contributes significantly to the development of TMD.[11] Psychosocial associated factors have a similar effect as that of the socioeconomic conditions. In this context it has been concluded by Slade et al that 8.8% of his study population gave rise to new onset of TMD related symptoms like pain.[12]

Many authors while working on TMDs have ascertained an association between depression and different stresses.[13,14]

Also a number of studies have found a relation between psychosocial factors and TMD pain in terms of onset and persistence of this symptom. Amongst the various investigated risk factors somatic awareness, perceived stress, mood state and depression were reported to have a strong relation with TMDs.[15,16,17]

Several investigations have found an association between depression, stress, anxiety and various symptoms of TMD. As these psychological factors causes muscle hyperactivity leading to muscle fatigue and its spasm,therefore, smooth and harmonious activity of joint muscles is compromised. This in turn leads to increase in depression when pain and other symptoms persist for longer period of time.[18,19]

A local study done in Faisalabad(Pakistan) while assessing the TMD prevalence and its severity in undergraduate medical students found an equal level stress in different discipline of medical education.[20]

Similar findings were also mentioned in another local study emphasizing a relation between the type of stress as a risk factor and TMD.[21,22] As the prevalence of TMD has been reported to be in the range of 20-50% in some studies therefore it infers to have an empirical data in local circumstances regarding the factors leading to TMD and its related signs and symptoms. The present study aims to find out the prevalence of TMD related symptoms in association with some dental and socioeconomic conditions along with neuromusculoskeletal factors. This will help to stratify the relevant population for optimizing the detections and treatment modalities at the earliest onset of TMDs. This will also have an equal implication in prevention of the relevant complications.

MATERIALS AND METHODS

This cross sectional descriptive study was carried out at Private Dental Clinics of Peshawar after their ethical approvals that were selected randomly. The study sample included healthy participants of both genders (males and female), with age ranging from 18 to 30 years. A total of 164 subjects were recruited through convenient sampling technique from July, 2019 to December, 2019.

The prescribed questionnaire was pretested through 4 subjects therefore, these 4 subjects were excluded from the sample size of the study. Hence the total sample size was based on 161 subjects. Informed verbal consent was sought from the participants before recruitment in the study. All those participants of the study were excluded who had undergone temporomandibular joint (TMJ) surgeries, history of trauma to TMJ, congenital TMJ anomalies and those cases already diagnosed as TMD problems. They were excluded because this research had a focus to determine the presence of risk factors for TMD in Non-TMD patients. Both examiners as well as study expert were present at the time of history and examination of patient.

A pretested self structured Proforma was used to investigate different parameters of study. This included socio-economic conditions of the participants along with some dental and neuromuscular factors. Socio-economic and psychological issues included some deep insight into financial problems and abnormal social habits respectively. Bruxism, tooth surface loss and clenching were amongst the dental related factors which were explored. Neuromuscular factors included joint sounds, headache and neck stiffness. All these factors were measured on Likert scale ranging from 0 to 4, where 0 was graded as having no effect and 4 having the maximum effect to identify the severity of risk factors. These severity level of risk factors were categorized as having no, low, mild, moderate and severe effect. The combined effects of all these responses were grouped into no (0-15), low (16-30), moderate (31-45) and severe (45-65).

Each participant was assessed through direct interview by asking and explaining the relevant questions, where deemed necessary, and recording directly on the Proforma. Intra-oral examinations of the participants were carried out at dental chair with good examination and using basic examination instruments like mouth mirror, probe and tweezers. The effects of dental factors for example feeling of awkward bite, bruxism, occlusal tooth surface loss, deep bite and clenching of teeth during stress conditions were recorded in an ascending order of severity as having no, low, mild, moderate and severe.

The data was analyzed by using SPSS (statistical package for social sciences) version 23. Mean and standard deviation was calculated for age, while frequencies were calculated for gender and other quantitative variables.

RESULTS

This cross sectional study included participants with age range of 18-30 years (mean age=21.4, SD=1.5) and with a male 54 (33 %) to female 107 (69 %). The severity level of TMD risk factors was higher in female as compared to male as given in the bar chart Fig 1.

When severity of TMDs was analyzed with age it was found that participants having age ranging between 20 to 23 years were having high frequency as compared to other participants as depicted in given Table 1.Maximum 42% were of 20 years of age while minimum 1% were of age 18,26 and 30 years each.

Frequencies and percentages of different risk factors for TMD are described in Table-2. Those participants who were having "no risk factors" were found to have almost equal percentages of dental and neuromuscular factors i.e. 67%. Similarly, presence of both dental (20.5%) and neuromuscular factors (22.4%) were observed in participants having low risk factors for the TMDs to develop in future. There was a significant difference among the risk factors as illustrated by estimated one way ANOVA test with p-value = 0.000 for all parameters as well as F-values mentioned in the same table which is further corroborating the significance of the results.

Responses regarding Socioeconomic & psychological issues are demonstrated in Table -3. The estimated values show that 47.8% had no financial issues whereas 51.7 % are facing financial issue with severity levels of "low, mild moderate and severe". While level of adverse impact of income, worrying about things, feeling lonely and any abnormal social habits are given with their percentages.

Table 4 shows percentages of second variable of dental factors related risk factors. Dental response checked regarding the dental factors depicted higher percentages for the question asked by the participants recorded that they don't had dental related issues. Similarly severity levels of the dental factor are also estimated as insignificant.

Similarly while assessing neuromuscular risk factors for future TMD to develop like joint sounds(65.8%), headache(24.2%), neck stiffness(55.3%), presence of abnormal pattern of opening(89.4%) and midline deviation(85.1%) showed higher percentages in lower scores.For all of these described risk factors have shown highest percentages of "No" response for any neuromuscular problem. Table 5. It means that maximum participants of the study have shown "no response" for the neuromuscular factors.

DISCUSSION

A large number of etiological factors have been reported for the development of temporomandibular disorders(TMDs).[23] In this cross sectional study the presence of some risk factors were investigated for their probable role in development of temporomandibular disorders in young adults of the local population. A total of three variables were investigated namely socioeconomic & psychosocial, dental and neuromuscular factors. Out of these three the score for socioeconomic & psychosocial variables were high as compared to other two variables, thus indicating its important role in the development of TMD. This finding is similar in nature to studies done earlier and to the one done in Norway.[24] Poor economic conditions usually results in lower health status of the individuals. A number of adverse effects like depression, stress and anxiety have been observed in people with lower socioeconomic status which, in one way or the other, affects the functions of TMD.[25]

Our study observed that Severity level of TMD risk factors for female was higher than males. This finding is similar to the findings of other studies done locally[26] and internationally[27] in which female were in predominance in TMD related problems. The

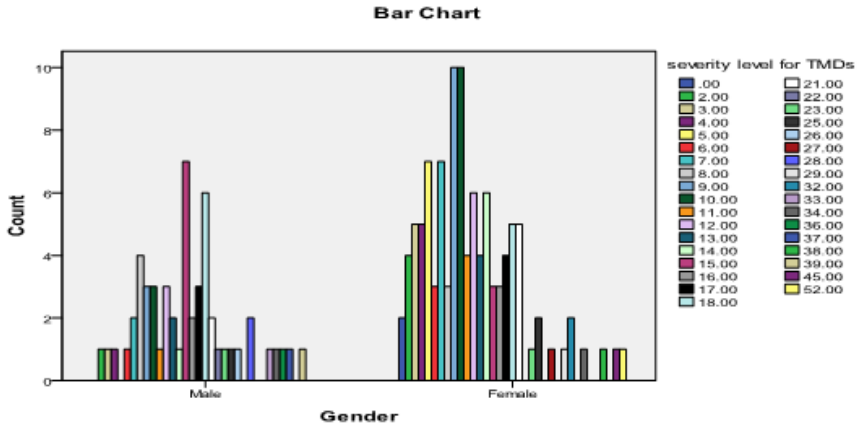

Fig 1: Gender wise comparison on the basis of accumulative scores of Severity levels of Risk Factors for TMD

Table 1: Frequency of participants' age (in years)

Age(years)	Frequency (%)
18	1
19	7
20	42
21	39
22	35
23	26
24	5
25	4
26	1
30	1

Table 2: Frequency values of Risk Factors for TMD

Risk factors for TMD	Socioeconomic & psychological	Dental factors	Neuromuscular factors
	N0=26%	N0=66.4%	No=67.1%
	Yes=74%	Yes=34.3%	Yes=32.2%
Low	33%	20.5%	22.4%
Mild	21.7%	6.3%	8.6%
Moderate	11.2%	3%	1(0.6%)
Severe	8%	4.9%	1(0.6%)
p-value	0.002	0.001	0.004

facts that, a large numbers of females suffer from TMDs,might be viewed in terms of their financial constraints. One possible reason could be that in this part of world most females are financially dependent on their male counterparts or other male members of the family. It has also been mentioned that females perceive pain as more severe when compared with males because for their enhanced temporal summation of pain stimuli.[28] Pedroni et al found a prevalacne of 84% of sign and symptoms of TMD in females.[29] Apart from financial constraints females who are involved for more hours in a week work have high

Table 3: Severity levels of Socioeconomic & Psychological Risk Factor

Responses	Financial No=47.8 % Yes=51.7 %	Adverse impact of income No=45.3% Yes=54.6%	Worrying about things No=17.4 % Yes= 82.6 %	Feeling lonely No=46.6 % Yes= 53.4%	Abnormal social habits No=49.1 % Yes= 51 %
No	47.8	45.3	17.4	46.6	49.1
Low	8.7	21.7	18	15.5	18.6
Mild	18	11.8	20.5	18.6	13.7
Moderate	12	8.7	24.8	7.5	8.1
Severe	13	12.4	19.3	11.8	10.6

Table 4: Severity levels of Dental Factor

Responses	Feeling of awkward bite No=70 .3% Yes=29.7 %	Bruxing teeth No= 69.5% Yes=30.5 %	Tooth occlusal surface loss No=72 .7% Yes=27.3 %	Clenching during stress No=54% Yes= 46 %	Deep bite No=67.1% Yes=32.9%
No	70.2	69.6	72.7	54.	67.1
Low	13	13.7	10.6	19.3	18
Mild	8.7	6.2	9.9	8.1	6.8
Moderate	3.7	3.1	1.2	9.9	3.1
Severe	4.3	7.5	5.6	8.7	5.0

Table 5: Severity Levels of Neuromusculoskelatal Risk Factor

Responses	Joint sounds No=91.9 % Yes= 8.1%	Headache No=24.1 % Yes=75.9	Neck stiffness No=55.3 % Yes= 44.7%	Presence of abnormal pattern of opening No=89.5% Yes= 10.5%	Midline deviation No=85.8 % Yes= 14.2 %
No	65.8	24.1	55.3	89.4	85.1
Low	3.4	29.2	26.7	4.3	9.3
Mild	2.6	28	10.6	5	3.7
Moderate	1.7	10.6	6.8	.6	.6
Severe	0.4	8.1	0.6	.6	.6

prevalence of TMD related problems. This is also true for other work related factors.[29]

When severity was analyzed for age, higher frequency was found amongst the young adults with the rage ranging between 20 to 23 years. This finding is in agreement with Norwegian national health survey, which found that psychological problems are high in adolescent population. Such psychological problems include increased stresses and anxiety.Another probable reason for this explanation might be the fact that most adolescents are under self-employed pressure to become perfect in different phases of life like in schools, social circles and physical appearance.[30,31]

Participants with no risk factors were significantly having higher frequency of dental and neuromuscular factors while participants with low risk factors were having high frequency of socioeconomic & psychological factors. Our results were favored by the study done by Celic to assess the relationship of occlusal factors and Parafunctional habits on the prevalence of sign and symptoms of TMD showed no significant role between occlusal factors and TMD. While assessing a relationship between malocclusion and functional occlusion with temporomandibular

disorders, Deitmar Gesch et al did not find correlation between them.[32]

Among the socioeconomic & psychological factors, the highest response given by the participants was for the financial issue and its level of adverse impact.A slightly more than fifty percent of the participant responded that they had some sorts of financial issue. There is an agreement on fact that substandard living life style can have an effect on the prevalence of TMD producing stress and anxiety among these individuals. It has been shown that incidence of TMD is more in individuals who are discontent with materialistic life style.[33,34] This finding is in agreement with our study which found that peoples with less income and resources of life are more in numbers than individuals having no problems with their income.

This study will be helpful while keeping in mind the high prevalence of anxiety and tension among various segments of population especially among students will help in early assessment,recognition and detection of TMDs risk factors in targeted population and to prevent burden of treatment later on.

LIMITATIONS

The chosen study sample was based on Private Dental Clinics, where as more propounding results may be obtained by reaching the individuals in community. Another possible limitation might be a narrow age range of the participants of study populations.

CONCLUSION

Within the limitations of this study it was found that female were at higher risk as compared to males in developing TMD in future.

The highest frequency of socioeconomic & psychological risk factors were found among the participants of the study and this difference was observed significant.

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