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Prevalence of Depression in Temporomandibular Joint Disorder: A Cross-Sectional Study

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Abstract:
Background: *Temporomandibular joint disorders (TMDs) causes a problem in chewing system which is comprised of the temporomandibular joint and soft tissue around it.*
Aim: *The present study aimed to explore the relationship of Depression and Quality of Life in patients with Temporomandibular Joint Disorders.*
Methodology: *This is the cross-sectional study which included all consecutive patient with TMD, reported in the department of oral and maxillofacial surgery with a duration of 3 months and 30 age-sex match healthy controls. Both the groups were assessed with the Hamilton Depression Rating Scale (HDRS) and Quality of Life Index (WHOQOL-100).*
Results: *We observed that the mean age of the patients was 36.83 year, females (73.3%) and rural population (56.7%) were more affected. Among clinical presentations pain (100%) was the most common followed by midline deviation (80%). About 36.7% of patients were found to be mildly depressed. The duration of illness and HAMD, GHQ 12 were found to be positively correlated while the correlation of WHOQOL was not statistically significant.*
Conclusion: *We can conclude that TMDs is a chronic disorder, which is more common in the female population. In the management of TMDs every patient should be screened for the depressive symptoms and managed accordingly.*
Keywords*: Temporomandibular joint disorders, Depression, Quality of life*

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I. Introduction

The term temporomandibular disorders (TMDs) is used for a number of clinical conditions which must involve the temporomandibular joint, muscles of mastication (MM) and structures around temporomandibular joint (TMJ).[1] TMDs are the most common chronic orofacial condition which involves a large portion of the population. [2]

The term TMDs was recommended by the American Dental Association and preferred by researchers as it did not make any assumption about etiopathology of the disorder[3]. Temporomandibular disorders (TMDs) are considered as plural because they encompass a number of problems affecting the TMJ, MM or both. In the general population, the prevalence of TMDs are two folds higher in females than males while in TMDs affected population females are 4 times higher than males[4,5]. Most studies suggested that TMDs are most prevalent among women in their childbearing age.[6,7] Over the time clinical manifestation tends to decrease in both the sex.[8-10] The cause of TMDs can be divided into myogenous and arthrogenous. The etiology of myogenous TMDs are multifactorial including malocclusion higher sensitivity to pain, jaw clenching stress anxiety and personality disorder. Patients with obsessive-compulsive disorder may also have a high level of disease conviction. The causes of arthrogenous TMDs can be disk displacement, rheumatoid arthritis, neoplasia and dislocation ankylosis

An epidemiological study conducted in Sweden indicated that 7% of cases met the diagnostic criteria of TMDs among 12-18-year-old population attended in public dental clinic.[11] The course of TMDs is chronic and recurrent in nature. The clinical manifestation of TMDs is pain, tenderness, limited range of movement of jaw and clicking sounds.[12] Other symptoms like headache, bruxism, orofacial pain may be present.[13] The prevalence of pain is variable and is the most important reason for consultation[5].

Temporomandibular disorders (TMDs) patients suffer from various types of psychosocial distress including poor quality of life. Patients with TMDs demonstrate increased somatization, stress, anxiety, and

depression disorder.[14, 15] Studies has been demonstrated a consistent relationship among anxiety, general somatic complaints, and TMDs pain.[16]

Patients with TMDs are important from a psychosocial perspective. Depression may also cause pain in the whole body or part of it. Due to psychological factors management of TMDs become multidisciplinary and cumbersome. So there is a need to know the prevalence of depression associated with TMDs in the northern part of India.

II. Material And Method

This study is a cross-sectional study conducted at Dr Z.A. Dental College, A.M.U. Aligarh.

Selection of cases:

The ethical clearance of the study was obtained from the ethical committee of Aligarh Muslim University, Aligarh. In this study, all the consecutive patients with the diagnosis of TMDs attending the Department of Oral and maxillofacial surgery, from 01/06/2018 to 31/08/2018 for the duration of 3 months, were enrolled after taking written informed consent. Patient's anonymity and confidentiality were ensured in this regard.

INCLUSION CRITERIA:

1. Who have given informed written consent.
2. Psychotropic free at least for 2 weeks.

EXCLUSION CRITERIA:

1. Individual with substance dependence except for nicotine and caffeine.
2. Individual with somatization disorder.
3. Those with neurological disorders, fibromyalgia, neuralgia or headache, earache.
4. Individuals received recent surgeries were also excluded to avoid confusions with TMD symptoms.

PROCEDURE:

All the consenting patients with TMDs fulfilled the inclusion and exclusion criteria of the study were recruited. Socio-demographic data were collected on self-designed semi-structured proforma. Following scales were also applied to all participants of the study-

Hamilton Depression Rating Scale (HDRS): It is also abbreviated as HAMD. This scale was designed to assess the severity of depression in depressed patients. In our study, we have applied 17 items version of HAMD. Grading of the scale is as follows-

0-7 = Normal, 8-13 = Mild Depression 14-18 = Moderate Depression 19-22 = Severe Depression ≥ 23 = Very Severe Depression[17]

WHO Quality of life-BREF (WHOQOL-BREF): It is the field trial version of WHOQOL-100. It includes 26 items of WHOQOL-100. Higher scores of WHOQOL-BREF indicates a better quality of life.[18]

General Health Questionnaire (**GHQ-12)**: It is a screening tool to identify the diagnosable psychiatric disorder. General Health Questionnaire is the 12 items containing tool each assessing severity of psychiatric problem over a few weeks. Individuals rated from 0 to 3. The total score ranges from 0 to 36. A high score denotes worse health.[19]

III. Results

Demographic Characteristics

Category	Variable	Frequency	Percentage
Age Group	18-25 Years	8	26.7%
	26-35 Years	6	20%
	36-45 Years	8	26.7%
	>45 Years	8	26.7%
Sex	Male	8	26.7%
	Female	22	73.3%
Residence	Rural	17	56.7%
	Urban	13	43.3%

Majority of patients were found between the age group 26-45 years and the mean age was 36.83 Years. Females were around four times higher (73.3%) in our sample among them majority were hailing from a rural background (56.7%).

Clinical Features

Variable	Frequency	Percentage
Pain	30	100%
Clicking	21	70%
Midline Deviation	24	80%
Trismus	24	80%
Derange Occlusion	4	13.3%
Carious Teeth	5	16.7%
Muscle Tenderness	12	40%

The most common presentation of the patient was found to be pain (100%) followed by midline deviation (80%) and trismus (80%).

Prevalence of depression

Category	Frequency	Percentage
Normal	6	20.0%
Mild	11	36.7%
Moderate	7	23.3%
Severe	6	20.0%
Total	30	100.0%

Around one-third of the patients were found to be mildly depressed followed by moderate (23.3%) and severe (20.0%)

Means of various scales:

Variable	HAM-D Score	WHOQOL	GHQ-12
Means	16.5000±6.174	53.3667±9.076	23.2000±4.105

Correlations

Variable	HAMD Score	GHQ12	WHOQOL	
Duration	.721**	.581**	-.146	
Significance (p)	.000	.001	.442	

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation between Duration of illness and HAMD, GHQ12 was found to be highly significant while with WHOQOL, there is no statistically significant correlation was found.

IV. Discussion

This study was planned to establish the socio-demographic characteristics, clinical presentation, comorbid depression. The mean age of the patient at the time of consultation was found to be 36.83 years. Majority of the patients were below 45 years. There was gross gender disparity observed in our results as 73.3% affected patients were females. This is consistent with the finding of previous research. [20, 21] Fischer et al concluded that this female predilection is due to hormonal changes during the reproductive period.[22] They also observed pain sensitivity was higher during lower estradiol content. Since, females are more predisposed to emotional turbulence, which further increased the chance to develop pain.

The most common presentation of TMDs was found to be pain and that was probably the primary reason for consultation to the doctor. This finding is in contrast to the finding of Bagis et al[23] in which clicking was the most common presentation in TMDs patients. This difference is possibly due to the sample of the patients as in the study of Bagis et al all the cases were referred for management while our case came by itself. The other possibility of the difference is also a small sample size of our study. Yamoka et al[24] found in their observation that 60% of participants with TMDs present with pain. Once patients of chronic pain develop depression, it stimulates the movement of the jaw like grinding and clenching of the jaw. This may further exacerbate joint pain.

Our observations indicate that mental health is related to TMDs by impairing WHOQOL of the patients. We also observed that General health questionnaire score was also higher in patients of TMDs. Our result is supported by the study of Rantala et al [25, 26] who concluded that there was a significant correlation between somatization and myofacial pain. Psychosocial factors are not only correlated with TMDs but also to other musculoskeletal pain[27], which further indicate that there is a complex association between psychosocial factors and pain.

Psychological conditions like depression, anxiety and stress can change the nociceptive impulses from the brain through the release of neurotransmitters. The release of neurotransmitters may decrease pain threshold[28]. The muscular pain starts a vicious cycle like increased muscle tone, decreased maximum voluntary

contraction and poor neuromuscular control exacerbate rigidity, joint stress, decrease the range of movement and increased pain[29].

There is a statistically significant correlation between duration of illness and HAMD score and general health questionnaire. The previous study[30] also supported the view that a longer duration of illness may cause more emotional problem hence psychological disturbance compared to the short duration of illness. Hence longer duration of illness may cause a higher proportion of the population to get affected by depression.

Eighty percent of the study group was found to be affected by depression. Among them 36.7% were mild, 23.3% moderate and 20.0% severely depressed. Our finding is much higher than the finding of Patil et al[31] in which only 53.3% of patients were depressed. The difference is due to the difference in the mean age of the population. As we know as the age passes the chance to get depressed is higher.

Limitation of the study:

The small sample size was the most important limitation of the study. This study was conducted at a single centre due to limited resources. Therefore our study cannot be generalized on the general population.

V. Conclusion

Our study revealed that TMDs are four times more common in females. Pain is the most common symptoms followed by midline deviation and trismus. Four fifths of the population was affected by depression so every patient need to be screened for depression and treat accordingly along with the management of TMDs. If we treat the patients of TMDs early then there is a lower probability to develop depression in them.

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Conflict of interest:
There are no conflicts of interest.

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