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ASSESSMENT OF TEMPOROMANDIBULAR DISORDER USING FONSECA QUESTIONNAIRE AND ITS CLASSIFICATION BASED ON DC/TMD CRITERIA IN TERTIARY HOSPITAL IN NEPAL.

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ABSTRACT

Background and objective: Temporomandibular disorders (TMD) is an orofacial disorder, associated with temporomandibular joint (TMJ) pain, masticatory muscles fatigueness, restricted mouth opening and clicking. The Fonseca anamnestic index (FAI) is questionnaire for evaluating severity and characteristics of TMD. The Diagnostic criteria for temporomandibular disorders (DC/TMD) is used for diagnosis of TMD. The study assessed the severity, clinical characteristic and patterns of TMDs in Eastern Nepal population.

Methods: A cross sectional study was done in Department of Oral Medicine and Radiology using census sampling. Eighty patients having TMD was interviewed using Fonseca's questionnaire, on pain TMJ pain, head, chewing, parafunctional habits etc. The clinical examination was done using DC/TMD examination form. The TMD was classified as pain disorder and TMJ disorder of right and left side. Statistical analysis was performed using SPSS version 11.5.

Results: FAI revealed TMD to be higher in female than male with odds ratio of 1.74. The mean age of the patient was 31.03 (±13.31). The duration from onset to diagnosis was 5.72 (±9.54) months. The Fonseca's questionnaire showed 51.3% had moderate TMD followed by mild and severe. DCTMD criteria location of pain was most commonly in the TMJ region 47(58.8%) of cases followed by 7.5% in temporalis, masseter and other muscle and 1 (1.3%) had pain in sternocleidomastoid.

Conclusions: The TMDs showed moderate severity with Anamnestic Index. Myalgia was the most common pain disorder and disc displacement with reduction in right and left TMJ disorder.

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INTRODUCTION:

Temporomandibular disorders (TMD) comprises a group of orofacial disorders, associated with pain on the temporomandibular joint (TMJ) region with fatigueness of the masticatory muscles, limited mouth opening and presence of clicking. [1] TMD is one of the main cause of non-odontogenic orofacial pain. Pain is generally located on the preauricular region or masticatory muscles. The pain is diffuse and deep seated and may radiate to face and head.[2] Studies have suggested that signs and symptoms may be as high as 88% and 57% respectively.[3-5] A non-patient prevalence study indicates closely 75% of subjects with just one TMD sign, and 33% with at least one symptom.[6,7] Young and middle aged adult are primary affected and is twice as common in women as in men [1,8,13] Pain in the temporomandibular region appears to be the most common symptom of this condition.[8,10,13] Signs includes joint sounds such as clicking/crepitus or popping sounds, restricted mouth opening (both in normal and maximum opening, deviation or deflection of the mandible during the course of mouth opening. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) the reliability and repeatability of diagnosis is possible for both research and clinical purpose. The Fonseca anamnestic index (FAI) is questionnaire used to assess individuals with TMD (Fonseca, 1992).[23] The simplicity of the FAI favors its implication for both research and clinical practice.[24] The high prevalence of this joint disorder with no literature on studies on TMD, hence this cross-sectional study is designed to estimate the prevalence of signs and symptoms of TMDs in patient visiting a tertiary care center in Eastern region of Nepal.

METHODOLOGY

The descriptive cross-sectional study was performed in patients referred or visiting the Department of Oral Medicine and Radiology. The study was conducted after ethical approval from the institutional research committee. Purposive sampling method was used and total of 80 patients were included. All patient having clinical features of TMD, fulfilling inclusion criteria and giving consent to voluntarily participate were enrolled into the study. The exclusion criteria were patients with age <18 years, not consenting, severe physical disease, trauma, ear problems and psychiatric treatment and were excluded. The Fonseca questionnaire was used to assess the prevalence and classify severity of TMD in our study population because it was found to be highly efficient in obtaining epidemiological data. It consists of 10 questions, about pain in temporomandibular joint, head, back, and while chewing, parafunctional habits, joint clicking, joint clicking, movement limitations, perception of malocclusion and sensation of emotional stress. The participants were asked by the principal investigator about the 10 questions and the responses were entered as "yes", "no" and "sometimes". Only one response was accepted for each question which was then used to classify the patients. Each ‘yes was value of 10, ‘sometimes’ value of 5, and ‘no’ value of 0. The sum of the values for each question were added to form Fonseca’s Anamnestic Index (FAI). The severity was classified based on total value as no dysfunction (0–15), mild dysfunction (20–40), moderate dysfunction (45–65), and severe dysfunction (70–100). [25] The examination was done and diagnosis was based on DC/TMD criteria, data were recorded on symptoms followed by clinical examination noting the range of motion and pain associated during excursion movement of the jaw, palpation of the muscle of mastication and TMJ, familiar pain and referral, range of motion (opening and lateral) joint sound were recorded performed using DC/TMD examination form. The palpation was done after calibration with specified period as in

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DCTMD. The mouth opening parameters was measured using Vernier caliper. The diagnoses was done based on DC/TMD diagnostic algorithms. .[28] The following DC/TMD Axis I diagnoses were derived: The TMD were classified as muscular disorder (Group 1), disc displacement (Group 2) and arthralgia, osteoarthritis and osteoarthrosis (Group 3).The disc displacement group were further divide into Disc displacement with reduction (DDwR), Disc displacement without reduction (DDwoR), with intermittent locking, Disc displacement without reduction with limited mouth opening, Disc displacement without reduction without limited mouth opening,

The Fonseca questionnaire and DC TMD questionnaire were converted to Nepali and validated using Cronbach alpha 0.814. The diagnosis was made primarily by the principal investigator and co-author, consensus of 2 examiners confirmed the diagnosis or else excluded. The radiologic examination was done to confirm diagnosis. Magnetic resonance imaging was used for the diagnosis of disc pathology and panoramic imaging with computed tomography for diagnosis of osteoarthritis. The training was done using self-instruction via an instruction video and reading the documentation by DCTMD. The statistical analysis was performed using SPSS software version 11.5.

RESULTS

The study assessed the severity of the Temporomandibular disorder (TMD) using Fonseca amnestic index criteria, which revealed predominance of Temporomandibular disorder to be higher in female than male with female prevalence of 63.8% and male predominance of 36.3% with odd ratio of 1.74. The patient's age ranged from minimum of 18 years to maximum of 77 years old. The mean age of the patient was 31.03 years with standard deviation ±13.31. The duration of TMJ disorder from the time of onset to diagnosis in months was 5.72 with standard deviation ±9.54. The earliest diagnosis was given at 3 days to delay up to 72 months. (Table1)

Table 1: showing dispersion in age duration to diagnosis in months, total score, SD: standard deviation.

	Age	Duration (months)	Total score of the Fonseca questionnaire
Mean (SD)	31.03 (13.31)	5.72 (9.54)	49.37 (14.97)
Median	26.0	3.0	50
Minimum	16.00	.25	20.00
Maximum	77.00	72.00	95.00

The highest prevalent symptom in Fonseca questionnaire was hard in opening mouth being present in 95% of the patient followed by hard to move the mandible side to side in and tired /muscular pain was sequential in descending order 82.5%, 81.2% 70% of the patients had TMJ clicking while chewing or opening mouth and consider themselves a tense nervous person. The FAI total score frequency was mostly 50. (Figure1)

The number and percentage of participants with different level of TMJ dysfunction based on the Fonseca's questionnaire (Clinical index classification – Fonseca) were statistically analyzed. Almost half of the participants (51.3%) were classified as with moderate temporomandibular disorder followed by mild disorder in 33.8% and only 15 % with severe dysfunction. All the responses for each question showed a statistically significant difference ($p<.05$) by chi square test.

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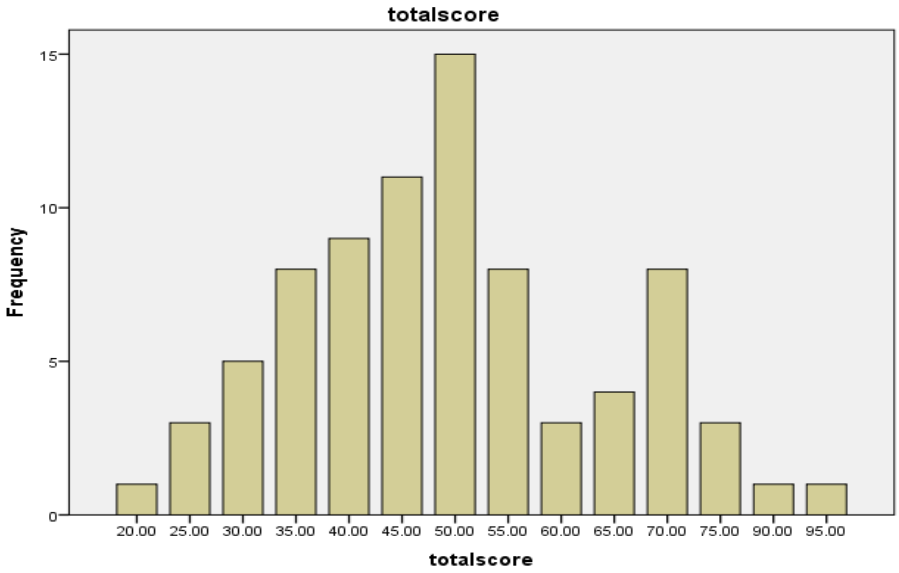

Figure1: Bar diagram showing the frequency of total score from the 10 Fonseca questionnaire

Table2 showing the primary pain site mostly the Right TMJ and less commonly bilateral TMJ.

	Frequency	Percent	Cumulative %
Right TMJ	30	37.5	37.5
Left TMJ	17	21.3	58.8
Bilateral TMJ	3	3.8	62.5
Right masticatory muscle	6	7.5	70.0
Left masticatory muscle	8	10.0	80.0
Combination	16	20.0	100.0
Total	80	100.0	

The study further evaluated the different characteristic of the temporomandibular disorder using DCTMD. Pain on the right TMJ was the most common complaint reported in 37.5 % of patent followed by left TMJ in 21.3% and the few had bilateral TMJ pain seen in 3(3.8%). The Masticatory muscle included temporalis, masseter, and other masticatory muscle. Combination had TMJ with either masticatory or non-masticatory muscle. Table 2 summarizes the described features. The most common location of pain was found to be in the TMJ region in 47(58.8%) of cases followed by 7.5% in temporalis, masseter and other masticatory muscle and only 1 (1.3%) had pain located in non-masticatory muscle which was in the sternocleidomastoid region. Headache was found to be positive in (15)18.8% of the subjects generally in the temporal region one reporting in the occipital region. Right side pain of the TMJ relatively high 38(47.5%) than the left side pain in 29(36.3%). (Table3).

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Table 3: showing location of pain in the last 30 days

	Frequency	Percent	Cumulative Percent
Temporalis	6	7.5	7.5
Masseter	6	7.5	15.0
Other masticatory muscle	6	7.5	22.5
TMJ	47	58.8	81.3
Non-masticatory structure	1	1.3	82.5
Combination	14	17.5	100.0
Total	80	100.0	

The mouth opening was measured using digital Vernier caliper, the interincisal distance in 5 different jaw movement namely: pain free opening, maximum unassisted opening and assisted mouth opening by deduction of the vertical incisal overlap and lateral by adjusting the midline deviation to right or left. The TMJ noise was present in 39 patients mostly click on opening and closing. Click was present on left 13(16.3%) followed right in 12(15%), bilateral 9(11.3%). Crepitus was found on right 4 (5%) and less commonly bilateral in 1(1.3%). Joint locking while opening was present in 21(26.2%) and wide-open position was present in 6 (7.6%).

Table 4: showing the different diagnosis of pain disorder, right TMJ disorder and left TMJ disorder (Disc displacement with reduction (DDwR), Disc displacement without reduction (DDwoR).

Pain disorder	Frequency	Percent
None	13	16.3
Myalgia	42	52.5
Myofascial pain	11	13.8
Right arthralgia	5	6.3
Left arthralgia	6	7.5
SHeadache to TMD	1	1.3
Combination	2	2.5
Total	80	100.0
Right TMJ Disorder	Frequency	Percent
None	42	50.50
DDwR	12	15.0
DDwR with intermittant locking	6	10.0
DDwoR with limited opening	8	10.0
DDwoR without limited opening	3	3.8
Degenerative joint disorder	5	6.3
Dislocation	4	5.0
Total	80	100.0
Left TMJ Disorder	Frequency	Percent
None	45	56. 25
DDwR	15	18.8
DDwR with intermittant locking	3	3.8
DDwoR with limited opening	5	6.3
Degenerative joint disorder	4	5.0
Dislocation	8	10.0
Total	80	100.0

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The most common Pain disorder was myalgia in 42 (52.3%) followed by myofascial pain arthralgia (more on the left then the right), combination and least were headache attributed to TMD. TMJ disorder predominantly diagnosed were DDwR on right side present in 12(15%) and 15(18.8) on left side followed by DDWoR , degenerative joint disorder were observed more on the right side 5(6.3%) and dislocation more on the left side. TMJ disorder predominantly diagnosed were DDwR on right side present in 12(15%) and 15(18.8) on left side followed by DDWoR, degenerative joint disorder was observed more on the right side 5(6.3%) and dislocation more on the left side TMJ 8(10%) than right side 4 (5%) (Table 4).

DISCUSSION

The wide variation in the prevalence of signs and symptoms of TMD has been linked to the diversity in terminology, the methodology of the studies and the lack of uniformity in the diagnostic criteria used by various authors. .[30,31] The study revealed predominance of TMD in female than male with female prevalence of 63.8% and male of 36.3% and odd ratio of 1.74. The literature has suggested a high prevalence of TMD in women; between 50.9% and 87.5%. [32,33]The patient's age ranged from minimum of 18 years to maximum of 77 years old. The mean age of the patient was 31.03 years with standard deviation ±13.31. The duration of TMJ disorder from the time of onset to diagnosis in months was 5.72 with standard deviation ±9.54. The earliest diagnosis was given at 3 days to delay upto 72 months.

Assessment of the severity of the TMD using Fonseca amnestic index criteria revealed, the highest prevalent symptom in Fonseca questionnaire was hard in opening mouth being present in 95%. Almost half of the participants (51.3%) were classified as with moderate temporomandibular disorder. Dekon and Pedroni et al. found similar results in their study in a Brazilian student population with moderate TMD degree in 51.3% for both sexes whereas Agerberg, Inkapööl and Kuttilaetal. related that the severe TMD rate in non-patient samples ranged from 12 to 16%.[34-36]

The most common Pain disorder was myalgia in 42 (52.3%) followed by myofascial pain arthralgia (more on the left then the right), combination and least were headache attributed to TMD. Myalgia was the most common TMD in our study though the frequency was less than the previous study by List T and Schiffman EL et. al.[37,38] Myofascial pain with referral was defined as myalgia plus referred pain beyond the boundary of the masticatory muscles being palpated, such as in the ear, teeth, or eye. Myofascial pain was more common in on the left than the right side. Likewise, arthralgia often occurred together with a diagnosis of myalgia as reported by Schiffman EL et al.[38] Headache attributed to TMD occurs in the temple region secondary to a pain-related TMD, and that is affected by jaw movement, jaw function, or parafunction was the least common disorder seen in 1(1.3%) patient.

TMJ disorder predominantly diagnosed were DDwR on right side present in 12(15%) and 15(18.8%) on left side followed by DDWoR, degenerative joint disorder were observed more on the right side 5(6.3%) and dislocation more on the left side TMJ (8:4). The most common TMJ disorder was DDwR diagnosed in 12(15%) on right side and 15(18.8%) on left side, this is lower than the research Clinical patients approximately 20% of adolescents and 40% of adults have disc displacement with reduction. .[37,39,40] For a definitive diagnosis, MRI was done. Degenerative joint disease (DJD) patents reported with crepitation from the TMJ during jaw movements and clinical findings that confirm this. Computed tomography (CT) scans of the TMJ may confirm the clinical diagnosis. .[38] The limitation of our study was diagnosis was primarily done clinically with

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use of soft tissue imaging for some patient due to unavailability in our hospital and financial constraints of the patients. The examiner had no formal training from DCTMD calibration center though the video and documents were thoroughly studied and the force calibrated prior to study but the self-instruction were as reliable to formal training.

CONCLUSION

The prevalence of TMDs among patient included showed moderate severity. Use of Anamnestic Index is helpful and this information can be of great importance for the early diagnosis of the dysfunction, preventing future complications. Myalgia was the most common pain disorder diagnosis where as in both the TMJ Disorder in the right and left had disc displacement with reduction as frequent presentation The Longitudinal studies in larger population are recommended to follow the prevalence and health care needs for TMDs. Future studies on community based screening to evaluate the prevalence of temporomandibular disorder and its burden is recommended. Public needs awareness on symptoms of TMD and importance of early intervention for better outcome and prevention of associated comorbidities. More recent research on TMD causative factor is needed as it is complex disorder with overlapping comorbidities of physical signs and symptoms and also on its psychological aspects .[41]

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