

# Relationship of TMJ Clicking with Ear Problems and Headache

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**Abstract** This research involve 450 patients with TMDs, this study include 271 women and 179 men, concerning the age, the sample age was extended from 13years to 65 years. Data were assessed numerically by Helkimo index, the most dominant age group was 21-30 years, 314 patients were complained from clicking(69.7%). Regarding the sex, female patients with clicking were most frequently represented, whom represent 191patients (60.8 %) from the total sample. Concerning ear problems, otalgia was the most prevalent symptom which represent (164) patients followed by tinnitus(124) patients, buzzing (77) patients and subjective hearing loss (42) patients .No significant differences were found between clicking and ear problems  $p \geq 0.001$ . Regarding headache 104 patients were suffering from headache, no significant differences  $p \geq 0.001$  with headache in relation to sex and clicking were found in this study.

**Keywords:** TMJ, ear problems, headache

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## 1. Introduction

Temporomandibular dysfunction syndrome (TMD) is a term that denote of clinical suffering including the masticatory muscles, the temporomandibular joint (TMJ), or the related structures of orofacial area .It is categorized mainly by pain and several complaints of malfunction of TMJ and/or the masticatory muscles, aberrations and motion restrictions [1]. Severe complications are much more common between women in clinical populaces, and the relation between females and males who look form management for TMJ disorder is 8:1 [2]. The most public symptom of TMD is joint sound of the TMJ, the occurrence levels fluctuating from 8 to 50 %. In contrast, mouth opening restrictions are somewhat rare, occurring in 5 % or less of the populace [3]. Headache is the most prevalent symptoms were described by persons complained from TMDs [4]. Due to intimate anatomical relationship of the masticatory muscles and temporomandibular joint to the head and as a result of the incidence of radiating pain, practically hypothesize that a major group of headache patients really have temporomandibular disorders as the common cause of their complaint [5]. Numerous ear symptoms, containing ear pain, otic congestion, biased hearing loss, vertigo and tinnitus, were accompanying with temporomandibular disorders (Costen's syndrome) [6]. Disorders of the temporomandibular joint were assumed to causing this problems like tinnitus through disorders of soft palate muscles. These two soft palate

muscles(tensor tympani and tensor veli palatini)were play a major role in tinnitus. Tinnitus and other illnesses has been reported to be successfully improved by the trigeminal pharyngoplasty [7]. Although, the discussion of the connotation between TMDs and tinnitus is unending because of the generation of multiple theories and little logical confirmation. Additionally, few writers described no sign of changes in ear symptoms after temporomandibular disorders rehabilitation [8,9].

## 2. Material & Methods

This research consist of 450 persons whom sent to oral medicine section at university hospital in Mosul city at time of 24months, this research include 271 woman & 179 man, 13-65 years old were the age range of the sample. Patients were identified to have temporomandibular disorders since of the lack of other illness entities, which describing for their complaint. Participants were observed by one interviewer to overcome bias and to create calibration. Assessment of clinical features of temporomandibular disorders and their severity by using index of Helkimo 1974 which is significant to regulate the dealing and to enable judgment with other revisions. Ear problems were reported as ear pain, tinnitus, buzzing sounds and subjective hearing loss. Headache were also reported as subjective symptom, the headache were classified as unilateral or bilateral. Statistical package of social science with a chi square test was used for statistical study,  $p \leq 0.001$  regarded as a significant value.

### 3. Result

Table 1 reveals that the age range (21-30) years signify the most prevailing collection of patients with TMDs, it is about 59.3% from the total sample, were as the age range (51-65) years signify the lowest prevailing age range, which is about 1.5% from the sample.

**Table 1. Distribution of patients according to age and sex.**

Age group/years	Male %	Female %	Total %
11-20	33 (18.5%)	64 (23.5%)	97 (21.5%)
21-30	121 (67.9%)	146 (53.7%)	267 (59.3%)
31-40	14 (7.8%)	44 (16.1%)	58 (12.8%)
41-50	5 (2.8%)	16 (5.7%)	21 (4.6%)
51-65	5 (2.8%)	2 (0.7%)	7 (1.5%)
	178 (39.5%)	272 (60.4)	450

The TMJ clicking were recorded in 314 patients among the sample, the maximum ratio were noticed at the age group ranged between (21-30) years, which is represent 58.2% while the age group (51-65) years represent the lowest ratio (1.5%). The clicking of TMJ was affecting females more often than males. 191 (60.8%) females patient from the clicking sample, where as 123 men participant whom denote (39.1%) from total group were suffering from clicking as shown in Table 2.

**Table 2. Distribution of patients with clicking according to age group and sex.**

Age group/years	Male with clicking	Female with clicking	Total sample	Total clicking %
11-20	26	49	97	75 (23.88%)
21-30	81	102	267	183 (58.28%)
31-40	10	28	58	38 (12.1%)
41-50	3	10	21	13 (4.14%)
51-65	3	2	7	5 (1.59%)
	123	191	450	314

Table 3 shows a non significant differences in temporomandibular joint clicking with ear pain, tinnitus, buzzing and subjective hearing loss, with chi square

**Table 4. Relationship of signs and symptoms of patients with TMDs with and without clicking.**

Signs & symptoms	Patients with TMJ click (314)		Patients without TMJ click (136)		*X2 Test	P value
	Frequency	%	Frequency	%		
Muscle tenderness	211	67.19	45	33.08	1.246	0.536 **N
TMJ tenderness	165	52.54	62	45.58	4.546	0.103 N
Hearing loss	27	8.59	15	11.02	0.663	0.416 N
Headache	77	24.5	27	19.85	1.164	0.281 N

\*X2= chi square test. \*\* N= non significant.

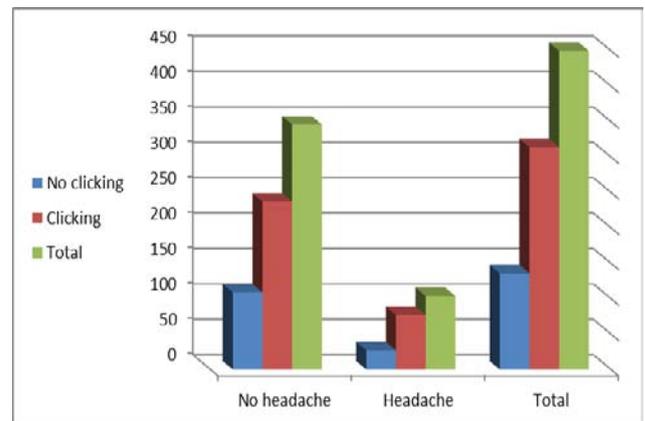
values, X2= 0.006, X2= 1.583, X2= 0.795 and X2= 0.663 respectively p ≥ 0.001.

**Table 3. The relation between TMJ clicking and ear problems.**

Gender and ear problems	Clicking	N0 Clicking	Total	*X2 test	P value
Male	123 (39.17)	55	178		
Female	191 (60.8)	81	272		
Ear pain	yes	115	49	0.006	0.937 **N
	no	199	87		
Tinnitus	yes	92	36	1.583	0.208 N
	no	222	104		
Buzzing	yes	57	20	0.795	0.373 N
	no	257	116		
Hearing loss	yes	27	15	0.663	0.416 N
	no	287	121		

\*X2= chi square test. \*\* N= non significant.

Figure 1 reveals that 104 patients with headache among the sample, 77 patients with clicking (37 patients have unilateral headache and 40 patients have bilateral headache) and 27 patients without clicking, non significant differences were found among the two groups (X2= 1.164 P= 0.281).



**Figure 1.** Sample distribution in relation to clicking and headache (X2= 1.164, p= 0.281)

Table 4 shows no significant differences of muscles tenderness, TMJ tenderness and headache in click and non-click patients.

## 4. Discussion

The occurrence of TMJ disorders were greater in females and this outcome agree with other researches [10,11,12,13,14]. These difference may be attributed to physiological & hormonal factors that should be considered. regarding the age, the age group between 11-20 years was the most frequently affected group, this finding is consistent with other study [15]. The aural symptoms usually observed in medical interviews was ear pain, which is the complaint of (164) patients out of 450 patients followed by tinnitus (124) patients, buzzing (77) patients and subjective hearing loss (42) patients, this result agree with other studies, who reports the otalgia is the greatest prevailing symptom whereas the hearing loss is the minimum described one [16,17]. Ear, Nose and Throat symptoms associated with pathological posterior dislocation of the condyle were first detected in 1920 by Monson who described a case of sudden deafness caused by unusual position of condylar heads .After five years, Decker observed many cases of deafness and impairment of hearing in cases of deep bite and back word condylar displacement in the glenoid fossa. In 1933, Goodfriend found the association between the occurrence of tinnitus and temporomandibular dysfunction [18]. As highlighted by a number of journalists, common phylo- and ontogenetic development of masseter muscles, facial muscles, and ear muscles (tensor palati and tensor tympani muscles), originating from the same pharyngeal arches, is important for the conjunction of ear symptoms and temporomandibular dysfunction. Also, posteriorly displaced condyle head (due to lost teeth, pathological teeth attrition, or trauma) may press on the tympanic artery and vein, leading to hypoxia within the middle ear and regarding a main cause of auditory illnesses. On the other hand, pressed by the condylar head may harm the tympanic membrane, result in stiffness of the stapedius muscle in a reflex pattern conveyed through the facial nerve. At the same time, the path of the auriculotemporal nerve in the temporomandibular joint region encourages its compression by the condylar head, producing an impulse for reflexive spasm of the tensor tympani muscle and leading to hearing impairment or tinnitus problems. Anatomical fissures between the articular cavity and the middle ear, such as petrotympanic or petrosquamous fissures, are ways for diffusion of inflammatory infections. Extra probable cause for the association of both kinds of symptoms is the conduction of extra mechanical forces by the discomalleolar ligament or straight pressure on the auriculotemporal nerve [19,20]. There is a direct anatomical and functional correlation among the temporomandibular joint and middle ear. The structure of unification between these two anatomical parts is the discomalleolar ligament or Pinto's ligament, which joins the medial retrodiscal zone of TMJ and the hammer bone of the middle ear [21]. Headache is the greatest common neurological symptom reported in primary care, and also in general neurological practice. In most cases there is no clear underlying cause. recurrent headaches happen in 76% of females and 57% of males [22]. In this research, no significant relationship was noted among gender and the existence of temporomandibular disorders and headache. According to

this research, headache is more repeatedly observed in female than male ,this result is consistent with other study [23]. It has been suggested that females are extra sensitive than males and have a habit of describe their discomfort as more strong, recurrent, and constant [24]. However, females have a tendency to show a more incidence of temporomandibular disorders symptoms than men through adolescence, due to the greater sensitivity and pain upon palpation of the temporomandibular joint and muscles of the masticatory system in females [25]. No significant differences of headache, muscle and TMJ tenderness between patients with and without clicking were found in this research. This result is in agreement with other study [26].

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