

Prevalence of oral and parafunctional habits in Nigerian patients suffering temporomandibular joint pain and dysfunction

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ABSTRACT

This study was conducted to determine the prevalence of oral and parafunctional habits in Nigerian patients suffering temporomandibular joint pain and dysfunction. It consisted of patients that were referred for treatment at the oral and maxillofacial surgery clinic of the University of Benin Teaching Hospital, Benin City, Nigeria. A pre-designed data form was used to collect information on age, gender, reasons for attendance, joint pain, side of pain, clicking, oral habits known to patient, parafunctional habits, occlusion and dietary habits. A total of 29 patients comprising 48.3% male and 51.7% female in a male to female ratio of 1:1.1 were studied. Their age ranged from 17 to 70 years. Eighty two per cent of them complained of joint pain on presentation while 17.1% complained of muscle pain. The joint pain was mainly unilateral in 62.1% and bilateral in 20.7%. Twenty six (89.7%) patients indulged in oral and parafunctional habits such as unilateral mastication 65.5%, hand-on-chin posture 58.6%, clenching 17.2%, tooth grinding 13.8%, chewing gum 37.9%, and finger and nail biting 24.1%. In all, 31.0% of males and 34.5% of females had clicking joints. Reciprocal click was detected in 52.6% of the study sample. There was a prevalence of 89.7% of oral and parafunctional habits in Nigerian patients suffering temporomandibular joint pain and dysfunction.

INTRODUCTION

Pain and dysfunction of the temporo-mandibular joint (TMJ) still pose a therapeutic dilemma to the oral and maxillofacial surgeon. Epidemiological data on the disorder in Nigerians appear not to be available, as only few

studies are recorded.¹ Studies from North America revealed a prevalence rate of 12.1% amongst adults,² although some authors have claimed that pain, clicking and locking have been experienced by approximately 20% of the general population.³

Pain in the joint and muscles is often distressing to patients. Advances in research in this area have thrown more light on the probable causes of the pain. The concept of inflammatory changes in the joint synovium, capsule or retrodiscal tissues as the principal underlying cause of pain has been documented.⁴ Large quantities of inflammatory mediators of pain were identified in the synovial fluid of

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patients with TMJ pain dysfunction.⁵ Fu et al correlated the concentration of interleukin-6 (IL-6) in synovial fluid with TMJ pain.⁶ Further studies showed that IL-6 is one of the most important pro-inflammatory cytokines that contribute to the pathogenesis of internal derangement in the TMJ.⁶⁻⁸ Sato et al⁹ detected the substance in nearly 50% of the synovial tissue specimen taken from TMJs with internal derangement. Other chemical mediators like a new peptide such as substance p and serotonin have also been detected in the TMJs and are thought to contribute to internal derangement.^{10, 11}

While research on what is causing pain in the TMJ is advancing, the association between oral habits such as finger and nail biting, unilateral mastication and parafunctional habits with pain and dysfunctional changes in the TMJ appears not to have been studied in Nigerians. This study was aimed at determining the prevalence of these habits in Nigerian patients suffering TMJ pain and dysfunction who were referred to our clinic.

PATIENTS AND METHODS

All consecutive patients with TMJ pain and dysfunction who were referred to the oral and maxillofacial surgery clinic from 1998 to 2002 were studied. Information on age, gender, reason for attendance, side of pain, clicking and its timing, muscle pain, type of diet, occlusion, oral and parafunctional habits were recorded in a pre-designed data form and analysed.

All the patients were examined for joint tenderness, muscle tenderness, clicking on opening and closing and occlusal relationship. Where necessary, radiographs were taken to eliminate hidden lesions in the head and neck region and haematological investigations were carried out.

RESULTS

A total of 29 patients referred to the clinic were studied. These comprised 14 (48.3%) males

and 15 (51.7%) females in a male to female ratio of 1:1.1. Their age ranged from 17 to 70 years with a mean age of 39.6 years. There were 9 (31.0%) patients in the 17–25 years age group, 3 (10.3%) in the 26–34 years age group, 7 (24.1%) in the 35–43 years age group, 3 (10.3%) in the 44–52 years age group and 8 (27.6%) in the over 53 years age group.

Twenty four (82.8%) patients complained of joint pain on presentation. Of these, 18 (62.1%) had the pain located unilaterally, 6 (20.7%) located bilaterally and 5 (17.2%) complained of muscle pain alone. There was clicking in the joints of 19 (65.5%) patients. Of these, there were unilateral clicking in 13 (44.8%) patients and bilateral clicking in 6 (20.7%) patients. Slightly more of the females ($n = 10$, 34.5%) had clicking joints than males ($n = 9$, 31.0%). Of the females, with clicking joints, 4 (40%) were in the 21–25 years age brackets, while 4 (44.4%) males were in the 17–29 years age bracket.

Twenty six (89.7%) patients indulged in oral and parafunctional habits. Only 3 (10.3%) patients did not indulge in these habits. Table 1 shows the oral and parafunctional habits detected in the patients. The most common habits were unilateral mastication (65.5%) and hand-on-chin posture (58.6%). Some patients indulged in more than one oral or parafunctional habit. Table 2 shows the association of symptoms with oral and parafunctional habits. Table 3 shows the timing and classification of clicks. The most frequent sides of joint pain were left ($n = 9$, 31.0%), right ($n = 8$, 27.5%), both sides ($n = 6$, 20.7%) and not applicable (N/A) ($n = 6$, 20.7%). Majority of the patients ($n = 23$, 79.3%) had angle class I malocclusion, while 1 (3.7%) patient had angle class II division I, 3 (10.3%) patients had angle class III, while 2 (6.9%) patients lost their lower molars. The dietary habits of the patients were mainly mixed ($n = 13$, 44.8%), soft diet ($n = 10$, 34.5%), hard food ($n = 5$, 17.2%) and not available ($n = 1$, 3.5%).

Table 1 Oral and parafunctional habits detected in patients

Habit	Frequency	Percentage	Preferred	Side for chewing		Side of pain	Frequency	%
				Frequency	%			
Unilateral mastication	19	65.5						
Left	9	47.4	Left	10	52.6	Left	3	15.8
Right	8	42.1				Right	4	21.1
Both sides	6	31.6	Right	5	26.3	Left	2	10.5
N/A	6	31.6				Right	3	15.8
Hand-on-chin posture	17	58.6				Left	5	29.4
						Right	4	23.5
						Both	8	47.1
						Muscles	3	17.7
						N/A	9	52.9
Clenching	5	17.2						
Tooth grinding	4	13.8						
Finger and nail biting	7	24.1						
Pen and pencil chewing	5	17.2						
Chewing gum	11	37.9						
Dry seed/corn chewing	1	3.4						

DISCUSSION

Previous studies in Nigeria¹ on facial arthromyalgia patients had identified unilateral mastication as an unconscious habit in over 50% of a sample of 20 patients. Earlier works by some investigators¹² linked this habit to the contralateral pain in the joint. Although an appreciable number of the patients in this study indulged in the habit, the association between it and contralateral pain experienced by the patients was equivocal. There was no notable difference between the preferred side for chewing and contralateral pain in the patients studied.

The patients who indulged in hand-on-chin posture and other parafunctional habits such as daytime clenching and tooth grinding tend to overload the joint.¹³ It was not surprising that 47.1% of the patients in this

study who indulged in the former habit felt pain on both joints. Although we did not determine whether the patient used the right hand or left hand on chin, the results of the study did not reflect the side where the pain was felt most. Bruxists and clenchers are prone to developing hyperactivity in the superior pterygoid muscle, which tend to put the meniscus under strain.¹⁴ It is not clear whether these habits contribute to the damage of the meniscus, superior pterygoid muscles and cause dysfunction. However, Berry et al¹⁵ postulated a gradual stretching of the upper head of the lateral pterygoid muscle in extreme bruxing as in sleep. If there is an initial change in the meniscus attachments as may occur after trauma,¹³ such activities as bruxism and clenching will only serve to apply further tension to the already damaged structure,¹⁴ thus causing local pain. Electro-

Table 2 Association of symptoms with oral and parafunctional habits

Symptom	Unilateral mastication n (%)	Hand- on-chin posture n (%)	Clenching n (%)	Pen and pencil chewing n (%)	Chewing gum n (%)	Finger and nail biting n (%)	Tooth grinding n (%)	Dry seed and corn chewing n (%)
Clicking and joint pain	8 (30.8)	5 (19.2)	2 (7.7)	–	3 (11.5)	1 (3.8)	–	–
Clicking alone	2 (7.7)	2 (7.7)	–	2 (7.7)	2 (7.7)	2 (7.7)	1 (3.8)	–
Joint pain alone	3 (11.5)	4 (15.4)	–	–	2 (7.7)	2 (7.7)	–	–
Muscle and joint pain	2 (7.7)	1 (3.8)	–	–	1 (3.8)	–	1 (3.8)	–
Pain around head and clicking	1 (3.8)	1 (3.8)	1 (3.8)	–	–	–	–	–
Muscle pain alone	1 (3.8)	2 (7.7)	1 (3.8)	1 (3.8)	1 (3.8)	–	1 (3.8)	–
Joint, muscle pain and clicking	1 (3.8)	2 (7.7)	1 (3.8)	1 (3.8)	2 (7.7)	2 (7.7)	1 (3.8)	–
Trismus, joint pain and clicking	1 (3.8)	–	–	–	–	–	–	–
Trismus and clicking	1 (3.8)	1 (3.8)	–	1 (3.8)	–	–	–	1 (3.8)

Table 3 Timing and classification of clicks

Timing	Frequency	Percentage
<i>Clicking on opening</i>	19	65.5
Early opening	8	42.1
Mid opening	2	10.5
Late opening	6	31.6
No clicking on opening	3	15.8
<i>Clicking on closing</i>	11	57.9
Early closing	4	21.1
Late closing	2	10.5
No clicking on closing	5	26.3
<i>Clicking on opening and closing</i>	10	52.6
Painful clicks	3	15.8
Not painful	16	84.2

myography studies have demonstrated a dramatic change in the contraction pattern of the lateral pterygoid muscle in patients suffering TMJ dysfunction.¹⁴

The other oral habits detected in the patients were pen and pencil chewing, finger and nail biting and chewing gum. Their role in causing pain and dysfunction in the joint has not been properly determined, nonetheless the damaging effect these activities may have in the joint may not be different from what occurs in bruxists and clenchers. Myalgia occurred in only 17.2% of the patients in this study. One of the causes of myalgia in the chewing muscles is the stress induced hyperactivity, which is thought to be built up through oral habits and other self-destructive behaviour.¹⁶ Furthermore, when subluxation of the meniscus has occurred it is also accompanied by myofascial pain and tenderness of the masticatory muscle.¹⁷

Some workers have associated TMJ dysfunction with the relationship of the mandibular incisors in the arch or malocclusion.¹⁵ However, this view is no longer popular although some adherents to this concept still abound amongst practitioners. The results of this study, where 79.3% of the patients have angle class I malocclusion lend credence to this. In this study, 82.8% of the patients complained of joint pain, which was mostly located unilaterally in 62.1% of the patients. A preliminary report on facial arthromyalgia in Nigerians¹ had identified 60% of patients who complained of joint pain. Most patients who experience painful dysfunction will encounter it before the age of 40 years.¹⁸ Majority of the patients in this study who experienced dysfunction were in the 17–25 years age group, which is in agreement with the observation of some authors.¹³

The results of this study show that equal number of young men and women aged 17–29 years experienced clicks and that the habits of unilateral mastication and hand-on-chin posture were most frequently associated

with joint pain and clicking while the latter habit was most frequently associated with TMJ pain alone. Clicking occurred in 20–30% of individuals above the 25 years age group and young women had a greater prevalence of clicking than men.¹⁹ Painful clicks were detected in only 15.8% of the clicking joints studied, while about eight out of ten clicks were painless. Most patients find clicking of the joint a disturbing phenomenon especially during mastication. Pain in the muscles of mastication could occur at the same time as painful clicks.¹⁷ Painless clicks do not seem to worry the patient. Many patients only seek treatment when the clicks are painful. Clicks become painful when the main insertion of the meniscus to the condylar poles begin to fail and the whole meniscus subluxes, while painless clicks are associated with the subluxation of the posterior band as the joint moves.¹⁷

About two thirds of the patients in this study experienced clicks on opening while 57.9% experienced it on closing. Clicking on opening and closing has been referred to as “reciprocal clicks” and when it is painful it signifies a total subluxation of the meniscus forward and in a medial position,²⁰ resulting in internal derangement. However, available evidence has shown that internal derangement per se cannot be the sole cause of pain in some individuals.^{4,21} None of the patients in this study described the joint as either locking or grating.

This study has revealed a high prevalence of oral and parafunctional habits in Nigerian patients who had painful and dysfunctional temporomandibular joint. The identified habits in the study sample may be significant in aggravating the signs and symptoms of the disorder by overloading the joint and perpetuating the condition. It is therefore important for the clinician to elicit these habits in all TMJ pain and dysfunction patients and counsel them appropriately as part of the overall management of the patient.

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