

# Musculoskeletal Symptoms: A Survey Amongst A Selected Nigerian Dentists

C Udoye, E Aguwa

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## Abstract

The purpose of the study was to investigate the occurrence of musculoskeletal symptoms in a selected Nigerian dentists and also to evaluate its pattern of distribution.

Method: Seventy-eight dentists who have been in practice in the last 12 months in the south eastern Nigeria were recruited via the completion of structured self administered questionnaires delivered personally by the first author over a 2 month period, November – December, 2006.

Result: The response rate was 93.3%. Mean age of the dentists ranged from  $34.8 \pm 3.5$  (females) to  $37 \pm 5.2$  (males). Though males ( $8.3 \pm 4.7$ ) were more experienced than females ( $7.5 \pm 4.1$ ), the latter ( $5.2 \pm 3.2$ ) saw more patients per day than males ( $4.2 \pm 2.4$ ). Neck, knee, ankle and upper back pains were statistically higher in males. The symptoms were highest at the shoulder bodily site. Also, generalists had more symptoms than specialists.

## Conclusion:

Musculoskeletal symptom is a significant occupational health problem in the studied population. Occupational health campaigns should be mounted by local professional association especially for the risked population.

## INTRODUCTION

Musculoskeletal symptom (MSS) may be defined as pain commonly experienced by dentists in the course of their career<sup>1</sup>. The musculoskeletal health of dentists has been a subject of many studies world over, with pain experience as the main focus<sup>1</sup>.

Westgaard<sup>2</sup> and Lehto et al<sup>3</sup> attributed work-related musculoskeletal pain as being of multifactorial origin. It was thought that the occurrence of MSS is posture related. However, studies have shown that being seated or standing made little difference on how frequently dentists experience pain. Rather affected is the pattern of pain distribution among the body part<sup>1</sup>.

The importance of MSS lies in its cumulative physiological damage which can lead to an injury or a career ending disability<sup>1</sup>. It is a common cause of work related disability

among dentists, with substantial financial consequences<sup>1</sup>.

Dentists who suffer MSS are also prone to neuro-circulatory disease, including varicose vein, postural defects and flat foot<sup>5</sup>.

Prevalence of MSS among dentists varies according to study. Biller<sup>1</sup> reported that 65% of dentists complained of back pain in his study. Similarly, Finsen et al<sup>6</sup> found a 65% MSS amongst Denmark dentists, while Chohanadisai et al<sup>7</sup> reported as much as 78% MSS amongst Thailand dentists. Distribution of MSS amongst body parts may be posture and work habits dependent<sup>8</sup>. When dentists sit, pain occurs not only in the back, but also in the neck, shoulders and arms, while those who stood experienced low back pain<sup>5</sup>. MSS was also found to be higher in part-time dentists than in their full time counterparts<sup>7</sup>. Furthermore, it was reported that professional experience correlated negatively with MSS occurrence<sup>7</sup>. However, female dentists were reported to

complain of more symptoms of pain and headache than their male colleagues <sup>8</sup>.

Literature on the current subject in Nigeria, most populous black country in Africa, is scarce despite MSS's role as one of the major causes of work related morbidity. Furthermore, availability of data on Nigerian dentists will not only enrich relevant global data bank, but also will be very useful in epidemiological research. The purpose of the study was to investigate the occurrence of MSS in a selected Nigerian dentists, and to evaluate its pattern of distribution.

**METHOD**

**Objectives:** The purpose of the study was to investigate the occurrence of MSS in a selected Nigerian dentists, and to evaluate its pattern of distribution.

**Study Population:** All the seventy-five dentists practicing in the south-eastern Nigeria were recruited in the study. Only dentists who have worked in the last 12 months were included in the study.

**Study Design:** A structured self administered questionnaires were distributed to respondents between November and December, 2006. Information on MSS requested were location of pain symptoms in the past 12 months and whether it interfered with daily activities. Furthermore, information on age, sex, professional experience, field of practice and number of patients seen per day were requested. Prior to the actual study, the questionnaire was tested among the dentists at the University of Nigeria Teaching Hospital, Enugu.

**Statistical Analysis:** Data were entered into a computer and analyses done using Statistical Package for Social Sciences <sup>9</sup>. Categorical variables were compared using Chi-square test, while continuous variables were tested with student t-test. P-values of less than 0.05 were taken as statistically significant.

**RESULTS**

**Figure 1**

Table 1: Age By Gender Distribution Of Respondents.

AGE (YEARS)	SEX	
	MALE n = 46 (%)	FEMALE n = 24 (%)
20 – 29	1 (2.2)	-
30 – 39	30 (65.2)	21 (87.5)
40 – 49	14 (30.4)	3 (12.5)
50 and above	1 (2.2)	-

$\chi^2 = 3.34, P = 0.068$

**Figure 2**

Table 2: Mean (+ S.D) Age, Experience, And Patients Seen Per Day By Gender Of The Dentists

SOCIODEMOGRAPHIC VARIABLE	GENDER		P – VALUE
	MALE n = 46	FEMALE n = 24	
Age (years)	37.00 (S.D = 5.2)	34.8 (S.D = 3.5)	P = 0.06
Experience (years)	8.3 (S.D = 4.7)	7.5 (S.D = 4.1)	P = 0.49
Patients seen per day	4.2 (S.D = 2.4)	5.2 (S.D = 3.7)	P = 0.20

**Figure 3**

Table 3: Prevalence Of Ms Symptoms Experienced By Bodily Sites And Gender

SITE	TOTAL n = 70 (%)	GENDER		P – VALUE
		MALE N = 46 (%)	FEMALE N = 24 (%)	
Neck	52 (74.3)	34 (73.9)	18 (75.0)	0.01*
Lower Back	54 (77.1)	37 (80.4)	17 (70.8)	0.82
Shoulder	57 (81.4)	36 (78.3)	21 (87.5)	0.89
Elbow	51 (79.9)	28 (60.9)	13 (54.2)	0.29
Hand/Wrist	52 (74.3)	35 (76.1)	17 (70.8)	0.23
Knee	49 (70.0)	26 (56.5)	13 (54.2)	0.04*
Ankle/Feet	49 (70.0)	26 (56.5)	13 (54.2)	0.04*
Upper Back	49 (70.0)	26 (56.5)	13 (54.2)	0.04*

**Figure 4**

Table 4: Prevalence of ms symptoms experienced by bodily site and practice.

SITE	TOTAL n = 70 (%)	PRACTICE		P - VALUE
		GENERAL N = 46 (%)	SPECIALIST N = 24 (%)	
Neck	52 (74.3)	39 (84.8)	13 (54.2)	0.005*
Lower Back	54 (77.1)	40 (87.0)	14 (58.3)	0.007*
Shoulder	57 (81.4)	39 (84.8)	18 (75.0)	0.318
Elbow	41 (58.6)	29 (63.0)	12 (50.0)	0.293
Hand/Wrist	52 (74.3)	38 (82.6)	14 (58.3)	0.027*
Knee	39 (55.7)	27 (58.7)	12 (50.0)	0.487
Ankle/Feet	39 (55.7)	27 (58.7)	12 (50.0)	0.487
Upper Back	99 (55.7)	27 (58.7)	12 (50.0)	0.487

Out of the 75 questionnaires distributed to the dentists, 70 were fully completed and were useable, giving a response rate of 93.3%. Furthermore, out of the 70 respondents, 46, (65.7%) were males while 24 (34.3%) were females. Fifty-one (72.9%) respondents were in the 30 – 39 years age band, followed by 40 – 49 years age band (24.3%) and 20 – 29 and 50 + year age bands, each having 1 (1.4%) respondent.

There was no statistically significant age difference between genders (P = 0.03) (Table 1).

Mean age (in years) for males was 37 (S.D = 5.2), whilst that for females was 34.8 (S.D = 3.5). Males were more experienced in years (8.3, S.D = 4.7) than females (7.5, S.D = 4.1). Furthermore, females saw more patients per day (5.2, S.D = 3.7) than males (4.2, S.D = 2.4). However, there was no significant statistical relationship between gender and either age, experience or number of patients seen per day (P > 0.05).

Neck, knee, ankle/feet and upper back pains were significantly higher amongst males than in females (P < 0.05), while the prevalence of lower back, shoulder, elbow and hand/wrist pains was not significantly associated with gender. (P > 0.05) (Table III). Of all the bodily sites for musculoskeletal (MS) symptoms, the prevalence was significantly higher at the shoulder (81.1%), followed by lower back (77.1%) and neck and hand/wrist, each accounting for 74.3%. Knee, ankle/feet and upper back each accounted for 55.7%. The relationship between fields of practice (general or specialist) and the distribution of MS symptoms at the bodily sites of neck, lower back and hand/wrist was statistically significant (P < 0.05). However, there was no significant relationship between fields of practice and the prevalence of MS symptoms at the shoulder,

elbow, knee, ankle/feet and the upper back (P > 0.05) (Table 4).

**DISCUSSION**

With a response rate of 93.3% in the current study, the chances of non response bias was very slim. However, a selected Nigerian dentists were studied and therefore, the data may not be a true representative of the entire Nigerian dentists. Furthermore, like most questionnaire based epidemiological studies, respondents in the present work may have under reported their actual musculoskeletal symptom situations. The method of questionnaires delivery could be the reason for the response disparities – Leggat et al <sup>10</sup> used postal method with a reply paid envelope, whilst personal delivery method was used in the current study.

The mechanism of musculoskeletal pain production has been studied extensively <sup>11</sup>. The onset of modern dentistry, as evidenced by four handed dentistry, has made the major part of the dentists' tasks purely sedentary in nature, which according to Pope <sup>11</sup>, has resulted in dramatic rise in musculoskeletal symptoms.

Karwski et al <sup>12</sup> reported that the symptoms are product of many risk factors, including prolonged static posture, repetitive movements, suboptimal lighting, poor positioning and genetic predisposition. Others are mental stress, physical conditioning, as well as age. Ratzon <sup>13</sup>, on the other hand, linked musculoskeletal pain occurrence to the dentists' frequent assumption of static postures which usually requires more than 50% of the body's muscles to contract to hold the body motionless while resisting gravity. The static forces resulting from these postures have been shown to be much more tasking than dynamic forces <sup>13</sup>. Repeated prolonged static postures are thought to initiate series of events that could account for pain, injuries or career ending problems seen in musculoskeletal disorder.

Mean ages, experience of the dentists in the current study, as well as the mean number of patients seen per day by the dentists were far lower than the figures reported by Leggat et al <sup>10</sup> in their study amongst Queensland dentists. The variation in the two reports may be related to the types of population sample, method of data collection, as well as sample size.

Preponderance of knee, ankle and upper back pains in males than in females in the current report agrees with that of Leggat et al <sup>10</sup>. However, neck pain occurred more in females in the report of Leggat et al <sup>10</sup>, which is in disagreement with

the finding of the present study. Higher figures seen in the present work may be the result of the dentists being more inexperienced and thus are poorer in maintaining a neutral balanced posture during clinical work. As a result, this predisposed them to the development of musculoskeletal symptoms. Like the previous study<sup>10</sup>, prevalence of musculoskeletal pain was highest at the shoulder bodily site but lowest at the ankle/feet and upper back sites. Shoulder pain may be described as pain or tenderness and muscle spasm in the upper trapezius. It is thought to result from high load on the trapezius muscles bilaterally, usually resulting from operating with elevated arms, as well as from prolonged forward bending of the head<sup>8</sup>.

Higher neck, lower back and hand/wrist pains seen amongst the generalists than specialists may be because general dentists very often assume static postures than the specialist. It may also be that the specialists with musculoskeletal symptoms under reference were not captured in the survey. In Nigeria, as well as in most developing nations, specialist dentists with their better employment opportunities, travel for greener pastures abroad.

### CONCLUSION

Within the limitations of the study, Musculoskeletal symptom is a significant occupational health problem in the studied population. The symptoms occurred more in males (66.5%) than in females (33.5%). Furthermore, general practitioners had more symptoms than specialists. It is recommended that occupational health campaigns be mounted routinely by the professional body, especially for the population at risk on issues of proper clinical postures, mechanisms of musculoskeletal disorder production, etc.

### CORRESPONDENCE TO

Dr. C.I Udoye P.o. Box 1158 Enugu, enugu state Nigeria E-mail: udoye432@yahoo.co.uk Phone: 08037519722

### References

1. Benny V, Keith V (2003) Mechanisms leading to musculoskeletal disorders in dentistry. *J Am Dent Assoc* 134: 1344 - 1350.
2. Westgaard RH (1999) Effects of physical and mental stressors on muscle pain. *Scand J Work Environ Health* 25 (Supplement) 19 - 24.
3. Lehto TU, Helenius HY, Alaranta HT (1991) Musculoskeletal symptoms of dentists assessed by a multi disciplinary approach. *Community Dent Oral Epidemiol* 19:38-44.
4. Anderson GBJ (1999) Epidemiologic features of chronic lower back pain *Lancet* 354:581 - 585.
5. Biller FE (1994) Occupational hazards in dental practice. *Oral Hyg* 36: 1994 - 1999.
6. Finisen L, Christensen H, Bakke M (1998). Musculoskeletal disorders among dentists and variation in dental work. *Appl Ergon* 29:119 - 125
7. Chohanadisai S, Kukiattrakoon B, Yapong B, Kedjarume U, Leggat PA (2000) Occupational health problems of dentists in Southern Thailand. *Int. Dent J* 50:36 - 40.
8. Marshall FD, Duncombe LM, Robinson RQ, Kilbreath SL (1997) Musculoskeletal symptoms in New South Wales dentists *Aust Dent J* 42: 240 - 246.
9. SPSS Inc (2003) Statistical Package for the Social Sciences. SPSS version 12-0-1 for Windows, Chicago, USA.
10. Leggat PA, Smith DR (2006) Musculoskeletal disorders self reported by dentists in Queensland, Australia. *Aust Dent J* 51:324 - 327.
11. Pope M (1993) Muybridge lecture. In: proceedings of XIVth Congress International Society of Biomechanics, Paris.
12. Karwowski W, Marras WS (1999). The occupational ergonomics hand book. Boca Raton, Fla; CRC Press; 69 - 170
13. Ratzon NH, Yaros T, Mizlik A, Kaner T (2000) Musculoskeletal symptoms among dentists in relation to work posture. *Work* 15:153- 158.

**Author Information**

**C. I. Udoye**

Department Of Restoeatrive Dentistry, University Of Nigeria Teaching Hospital (UNTH)

**E . N. Aguwa**

Department Of Community Medicine, University Of Nigeria Teaching Hospital (UNTH)