

Assessment of Ergonomic Decencies; at Work Dentists

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Abstract

Background: To evaluate work place efficiency and prevalence of musculoskeletal problems in practicing local dentists.

Materials and methods: This multicenter cross sectional study was conducted in duration of one year, a total of 66 dentists, who met the inclusion and exclusion criteria participated in this study. The Data collection was obtained by means of a structured questionnaire to evaluate ergonomics. The variables evaluated were: presence of pain, affected zones, gender, small breaks between work.

Results: After statistical analysis it was state that higher numbers of practicing dentists were suffering from musculoskeletal problems of some kind.

Conclusion: It is important to increase the awareness regarding the term ergonomics so dentists can be release from doing work in an awkward posture and can provide high quality service without threatening their professional careers.

Keywords: Ergonomics; Musculoskeletal disorders; Muscular pain

Introduction

In recent times ergonomics has become a popular term. The term has been used with most professions but increasingly in the dental profession [1]. It is a Greek word ERGO means work and NOMIC means natural law; precisely ergonomics is defined as relationship among the personnel, equipment, environment and designing of the working area [2,3]. It emphasizes on individual human capability in relation to work limitation environment [3]. Dentistry is a profession in which all the dentists worldwide are commonly affected with health hazard like musculoskeletal disorders which hinders their clinical practice resulting in early retirements [3]. Dental personnel are at an increased risk of developing such disorders [4,5]. According to WHO musculoskeletal disorder is define as a disorder of the muscles, tendons, peripheral nerves or vascular system not directly resulting from an acute and instantaneous event. Therefore it is also known as work related musculoskeletal disorder [6]. The main reason found for this disorder present among dentist is long working hours in inadequate posture [7]. The past studies have proven that working in awkward posture results in muscular pain [8]. Back pain (70-90%) is considered the most common problem suffered by the dental operators followed by neck, shoulder, hand pain and several other disorders [9,10]. The Hoevenaars [11] in 1940's revealed that more than 65% dental practitioners suffered from problem of backache. The Efficacious application of ergonomic principles by improving work environment can prevent from strenuous injuries on the other hand unsuccessful application can lead to various health hazards eventually leading to career ending disability [1,12]. The aim of this study was to evaluate ergonomic factors associated with age, gender and work environment causing musculoskeletal hazards in local dental practitioners.

Materials and Methods

The cross sectional questionnaire based study was carried out at different dental centers in Karachi for the duration of one year. A total number of sixty six practicing dentists working in either private or public setup were involved in this study. Prior verbal consent was sought out from each participant. Those who met the inclusion criteria

I. practicing dentist II. General as well as specialized practitioners III. Postgraduate students and Exclusion criteria I. undergraduate students II. Dentists suffering from previously diagnosed arthritis III. Fresh graduates IV. Dentist who is involved in any sports activity three times a week.

It was requested to participants to fill questionnaire by themselves to avoid any error. The questionnaire consisted of thirty eight questions with multiple choices. Questionnaire was divided into two parts; first part consisted of demographic questions including name, age, and gender, professional background (Graduates or Post graduates). Second part consisted of working approaches, painful disorder associated with musculoskeletal system and do they follow any prophylactic activity in response to problems they faced in practice. The data collected on questionnaire was entered in (SPSS 16) for statistical analysis. Chi square test was used to assess the relationships between musculo skeletal disorders and work practices, prophylaxis and management. Values of $p < 0.05$ were considered statistically significant. Microsoft Access and Microsoft Excel were used to process the obtained results.

Results

According to present study majority of participants were female 66.7% and 33.3% male participants (Table 1). Figure 1 showed that majority of subjects fall in age group of 21-33 (39 females and 17 males), eight subjects between age group of 34-46 (4 male and 4 female) and very few in age group of 47-57 (1 male and 1 female). As the study was

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| | Frequency | Percentage |
|--------|-----------|------------|
| Male | 22 | 33.3 |
| Female | 44 | 66.7 |
| Total | 66 | 100.0 |

Table 1: Gender distribution.

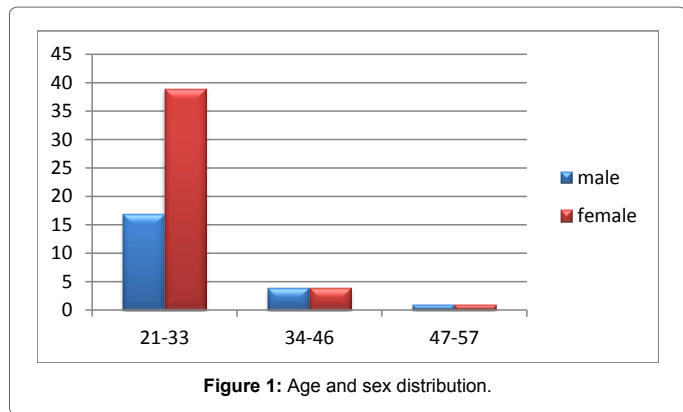


Figure 1: Age and sex distribution.

conducted in teaching institutes of Karachi so mostly young dentists were involved in this study so large group of subjects are under age group of 21-33, the female predominance is due to an abundance of females in dental field.

Figure 2 showed prevalence of pain, majority of dentists were suffering from pain (29 females and 12 males) and few dentists had no complain of muscular pain (15 females and 10 males). Surgery (37.9%) and endodontic (36.4%) consider as the most stressful domains in dentistry as they lead to muscular pain and periodontic (4.5%) as the most eased procedure (Table 2).

Table 3 states that 27.6% participants reported pain in the lumbar area, 12.1% in the shoulder area, 9.1% in neck area, and 7.6% in dorsal and cervical area 1.5% in forearm, elbow, wrist and hand. Table 4 showed that 63.6% dentists took small breaks during clinical procedures and 34.8% dentists did stretching exercises to release muscle pain.

Figure 3 showed that 68.2% dentists have no knowledge regarding term ergonomics and 31.8% were known to this term. Table 4 state that female dentist take more prophylaxis measures than male dentists (16 females and 07 males) ($p < 0.05$).

Figure 4 showed those dentists who are working 11 to 15 hours had complained more about muscular pain.

Discussion

Dentistry is the profession that requires a lot of concentration and focus on details of micro and macro level concerns during practice [2]. Dental practitioners are concerned about patients well being and comfort that they are paying little to no attention to their working posture until they experienced pain or discomfort [13].

According to Desai et al. [12] 67.7% dentists were not aware of the term ergonomics which strongly support present study in which 68.2% (Figure 3) dentist are unaware of the term ergonomics. In the current study it was also observed that 62.1% dentist suffer from muscular pain due to their clinical practice, which is in accordance to 62% prevalence find by Szymanska et al. [14] and almost similar results were explored by Yadav et al. [3] and Cabellaro et al. [15].

In present study periodontics (4.5%) resulted as the most pain free

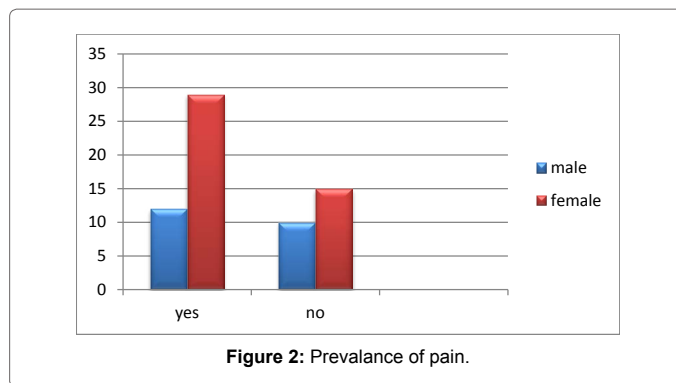


Figure 2: Prevalence of pain.

| Variables | Frequency | Percentage |
|--------------|-----------|------------|
| Surgery | 25 | 37.9 |
| Endodontics | 24 | 36.4 |
| Periodontics | 3 | 4.5 |
| Restorative | 5 | 7.6 |
| None | 9 | 13.6 |
| Total | 66 | 100.0 |

Table 2: Muscular pain during different procedures.

| Variables | Frequency | Percent |
|---------------|-----------|---------|
| Lumbar zone | 18 | 27.3 |
| Dorsal zone | 5 | 7.6 |
| Cervical zone | 5 | 7.6 |
| Neck | 6 | 9.1 |
| Shoulders | 8 | 12.1 |
| Forearm | 1 | 1.5 |
| Arm | 1 | 1.5 |
| Wrist | 1 | 1.5 |
| Hand | 1 | 1.5 |
| No | 20 | 30.3 |
| Total | 66 | 100.0 |

Table 3: Zones of pain.

| | Stretching Exercises | | Mini Breaks | |
|-------|----------------------|------------|-------------|------------|
| | Frequency | Percentage | Frequency | Percentage |
| YES | 23 | 34.8 | 42 | 63.6 |
| NO | 43 | 65.2 | 24 | 36.4 |
| TOTAL | 66 | 100.0 | 66 | 100.0 |

Table 4: Mini breaks and stretching exercises.

domain in dentistry (Table 2) but according to Cabellaro et al. [15] periodontics is consider as the most agonizing field in terms of dental posture it may be because their study is done on dental students who may be exposed to extensive procedures. Ratzon et al. [16] found same results as of our study which states that oral surgeon (37.9%) have more frequent musculoskeletal discomfort amongst other dental specialists.

In agreement with Lalumandier et al. [17] in our study 27.3% dentist reports lumbar region as the most affected pain area due to working for long hours in awkward posture but Harutunian et al. [18] contradicts with our findings they states that 72% dentist suffer pain in cervical area.

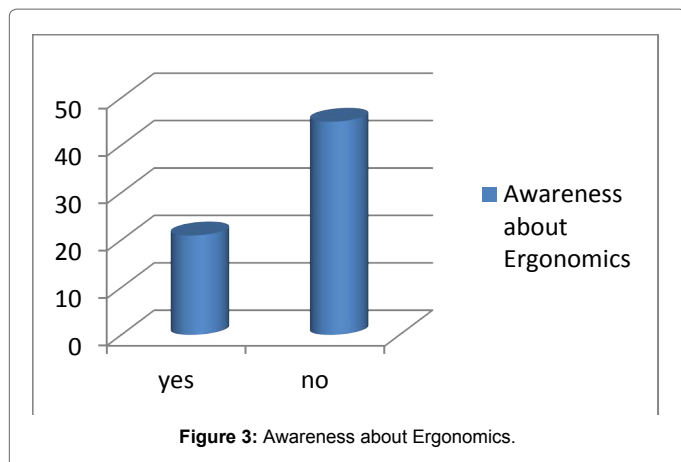


Figure 3: Awareness about Ergonomics.

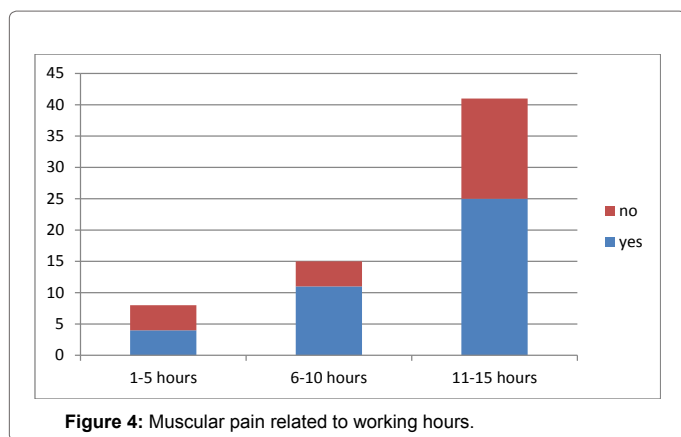


Figure 4: Muscular pain related to working hours.

In our study, as mentioned in (Table 4) 63.6% dental professionals takes breaks during clinical procedures and which is in accordance to the applied occupational and environmental hygiene guidelines who recommend at least 6 minutes of rest every hour for professionals who perform repetitive movements [16,19,20]. The dentists who are working long hours a day in awkward postures are more prone to muscular pain (Figure 4). As a consequence of occupational stresses placed on their bodies, oral health care providers (OHP) are vulnerable to musculoskeletal disorders (MSDs) [21]. According to Rundkrantz et al. [5] and Szymańska [14] study 66% dentist state that prophylactic measures show positive impact on muscular pain reduction which supports our study.

In the current era due to an upshot of physical discomfort because of awkward posture in clinical practice more dentists are becoming aware of occupational hazards and paying more attention to prevention of such hazards [22]. Ergonomics have come into the profession in a big way. Further development of dental ergonomics must take place on the basis of a rational vision of the future.

Conclusion

Muscular pain is the common problem associated with many dentists. Adopting adequate postures in clinical practice and having a favorable work environment could reduce the frequency of lesions to the muscular skeletal system avoiding an early retirement from the profession. Further studies are needed to identify causes of musculoskeletal pain and appropriate interventions to reduce its prevalence.

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