



Original article

THE PREVALENCE OF NECK PAIN AMONG DENTISTS IN MISURATA, LIBYA, STUDY OF CAUSES AND TREATMENT MANAGEMENT

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ABSTRACT

The dental profession is both physically and intellectually demanding because of the numerous treatment procedures, required focus, and mental strain, therefore, dental profession is one of the occupational risk factors of Cervical pain. A number of studies have shown that neck pain often starts early in dental career even during educational training. This study aims to determine the prevalence of neck pain among Libyan dental professionals, as well as describe factors associated to work-related musculoskeletal disorders, Moreover this study explained primary causes of neck pain, degree of severity and primary strategy for managing neck pain. Material and Methods: A cross sectional study involved 194 dentists working in government and private hospitals and clinics in Misurata from December to May 2025. Data were collected using a questionnaire to collect responses from the study population regarding the prevalence of neck pain among dentists, based on insights drawn from various previous studies, a preliminary version of the questionnaire was designed. Results: the response rate was 100%, female respondents represented the highest proportion of the study sample at 54.1%, whereas male respondents accounted for a smaller proportion of 45.9%. results indicated that the majority of the sample (81.8%) suffer from neck pain, while a smaller proportion (23.2%) do not report experiencing such pain. The current study has revealed that the most frequently cited cause of neck pain was incorrect working posture (54.1%). Other notable factors included long working hours (18%) and insufficient physical activity (16.5%). Less common causes were stress/fatigue (5.7%). Conclusion: Dentists in Misurata are likely to develop neck pain due to incorrect working posture as other notable factors included long working hours, stress/fatigue and the use of uncomfortable tools.

KEYWORDS: Cervical pain, Dentists, Neck pain, Dental professionals, Work-related musculoskeletal disorder.

INTRODUCTION

The dental profession is considered a physically and intellectually demanding occupation to the various treatment procedures, required focus, and mental strain [1]. According to the World Health Organization, over 1.71 billion individuals globally suffer from musculoskeletal problems.

Musculoskeletal disorders (MSD), particularly neck discomfort, represent significant occupational health concerns within the dental profession [2]. It is a well-known fact that dental care experts function within a confined and sometimes difficult cavity in the mouth, performing precise and time-intensive operations, they have a duty to

operate while sustaining muscle imbalance and asymmetrical postures for extended durations. forward bending ,neck rotation and loss of cervical lordosis considered as main risk factor for MSD [1].

According to Khan, Ahmed and Sadiq (2016), dental professionals are at risk of developed work related diseases and injuries e.g. systemic diseases and musculoskeletal disorder such as cervical pain. World health organization characterizes work related musculoskeletal disorders as influenced by several factors including but not limited to structural, psychological and socio-cultural variables. However age, poor of posture and lack of regular exercises also considered as risk factors for cervical pain , in addition activities such as holding prolonged static postures and working with very small space in mouth executive meticulous and time intensive process which lead in long time to cervical pain [1,4].

A considerable amount of literature has been mainly concerned with the cervical pain among dental practitioners, reporting that musculoskeletal disorders are distinct as and degenerative and inflammatory diseases or disorders of tendons, muscles, ligaments , blood vessels, nerves, bones, and joints that can result in pain, they can be defined as neuromuscular weakening, which develops increasingly or repeatedly at low-intensity loads. in fact (MS) disorders are considered one of the most frequent occupational diseases among dental workers [5,6].

Traditionally, the dental profession has been predominately male; however, the current ratio of female to male dentists is well balanced with 45% being female and 54% male, nevertheless, this demographics shift emphasizes the

need to consider the specific concerns of female dentists such as the higher levels of pain as well as the longer durations of this pain in comparison with male dentists.

This, in fact, makes it essential to pay particular care to the needs of female dentists in addition literature shows female participants reported more severe levels of pain, more frequent pain and pain of longer duration than men [7].

The prevalence of neck pain among dentists in Misurata, Libya, is notably high, with musculoskeletal disorders (MSDs) reported as the most common occupational health issue, affecting 48.2% of practitioners [8]. This figure aligns with global trends, where neck pain prevalence among dentists ranges from 26% to 73% in various regions [9]. Contributing factors include improper postures, long working hours, and repetitive movements, which are prevalent in dental practice [2]. Additionally, the findings suggest that dentists in the private sector and those working full-time experience higher rates of musculoskeletal issues [4]. Comparatively, while the prevalence in Misurata is significant, it reflects broader patterns observed internationally, emphasizing the need for ergonomic interventions and preventive measures to mitigate these health risks[1,3].

In various studies, it has been stated that cervical pain is linked to poor health, psychological problems, social distraction and neck injuries, current Literature reported that prevalence of cervical, shoulder, arm and back pain in dentists is as high as 81% . [10]. It has been demonstrated that cervical pain consider as the second most common MSD in dentistry, characterized by pain, impairment and occurrence of

discomfort for an extended time period in the soft tissue structures [3]. Furthermore, headache neck soreness and pain around shoulders consider as signs of cervical pain in dentists. Dental profession is one of the occupational risk factors of cervical pain. Studies showed that neck pain starts early in dental career even during educational training [11].

The above discussion raises an interesting question concerning the prevalence, causes and risk factors of neck pain among Libyan dental practitioners. To date no research in Libya has explored any of the various aspects of neck pain in dental practice. This study was set out to explore the prevalence of cervical problems among Libyan dentists.

METHODOLOGY

The present research paper provides a detailed description of the research procedures undertaken by the researchers. It outlines the research methodology adopted, the study population, the data collection instrument and its development stages, the timeline for implementing this instrument, and the statistical methods used.

Research Methods:

After reviewing the relevant literature and previous studies, the researchers employed the descriptive-analytical method, since it is appropriate for the nature of the research problem. This method focuses on identifying the extent of neck pain prevalence among dentists.

Study Sample:

In alignment with the objectives of this study, the research population comprises dentists in the city of Misurata, totaling 194 dentists.

Research Instrument:

The study adopts a cross-sectional questionnaire-based survey of dental practitioners from different parts of Misurata, Libya. The researchers developed a questionnaire to collect responses from the study population regarding the prevalence of neck pain among dentists.

Based on insights drawn from various previous studies on related topics (8), a preliminary version of the questionnaire was designed. It consists of three sections:

Section 1: Nature of neck pain (7 items).

Section 2: Impact of neck pain on work (3 items).

Section 3: Preventive and therapeutic strategies (11 items).

The total number of items is 21, and each item is accompanied by a set of response options, with respondents required to mark (✓) next to the selected option.

Procedures for Administering the Questionnaire to the Study Population: Following the scientific validation and linguistic refinement of the research instrument, the researchers ensured the eligibility of the study participants. The data were collected using a self-administrated questionnaire, which was distributed in-person to dentists in government and private clinics to facilitate clarification of any questions and to ensure complete responses to all items. This approach minimized data loss and ensured statistical reliability of the data collected.

Participants were approached by the researchers and invited to participate and a copy of the self-administered questionnaire, written in simple English, was handed over to participants. The questionnaire was pretested being clear and understandable among a group of 15 dentists working in private hospital.

As no changes to the questionnaire form were actually needed during the pilot study, the questionnaires completed in pilot study were included in the final study sample (all questionnaires were completed once by the participants). The participants were asked to provide information about their demographic (age and sex) and professional characteristics, such as the type of practice sector (public or private), work pattern (part time or full time), the level of dental education (University degree, or higher degrees), the number of years in dental practice (standing , Sitting), The Participants were also asked questions related to causes of neck pain (stress, incorrect working postures...) and times when pain increased in addition question related to type of treatment management that participants recieved for neck pain.

Statistical Methods:

To derive results from the research instrument, data obtained from the field study were processed through statistical analysis, including: Percentage (%) and Frequency count (n)

Ethics Approval and Consent to Participate:

The study was approved by the Faculty of Medical Technology. Permission was obtained from all dentists, and informed consent was secured from all participants after explaining the study's purpose, procedures, and potential risks in Arabic. All responses were anonymized to protect participants' privacy.

RESULTS

Rgearing gender, female respondents represented the highest proportion of the study sample at 54.1%, whereas male respondents accounted for a smaller proportion of 45.9% (Table 1).

Table 1: Distribution of the Study Sample by Gender

Gender	No.	(%)
Male	89	45.9%
Female	105	54.1%
Total	194	100%

It is evident from the data that the age group 30–40 years represents the largest segment of the study sample with a percentage of 57.7%, followed by the under 30 group with 34.5%. The 41–50 years group follows with 6.7%, while the over 50 years group represents the smallest proportion at 1.0% (Table 2).

Table 2: Distribution of the Study Sample by Age Group

Age Group	No.	(%)
Under 30 years	67	34.5%
30–40 years	112	57.7%
41–50 years	13	6.7%
Over 50 years	2	1.0%
Total	194	100%

The most commonly reported form of muscle strain was in the posterior neck muscles (43.8%). This was followed by limited rotation and lateral bending (5.7% each), and full neck muscle strain (4.1%). Anterior muscle strain and limited flexion were each reported by 2.6%, while limited extension was the least common at 0.5% this assessment depend on measuring range of motion (ROM) for cervical muscles for participants by using Goniometer during normal neck movement (flexion, extension and, rotation) (Table 3).

The most frequently cited cause of neck pain was incorrect working posture (54.1%). Other notable factors included long working hours (18%) and insufficient physical activity (16.5%).

Table 3: Type of Neck Muscle Strain

Type of Muscle Strain	No.	(%)
No strain	68	35.0%
Anterior neck muscles	5	2.6%
Posterior neck muscles	85	43.8%
All neck muscles	8	4.1%
Limited flexion	5	2.6%
Limited extension	1	0.5%
Limited rotation	11	5.7%
Limited lateral bending	11	5.7%
Total	194	100%

Less common causes were stress/fatigue (5.7%) and the use of uncomfortable tools (3.1%). Other reasons, such as “all of the above” or health-related issues like blood pressure, represented just 2.6% of responses (Table 4).

Table 4: Causes of Neck Pain

Cause	No.	(%)
Incorrect working postures	105	54.1
Prolonged working hours	35	18.0
Use of uncomfortable tools	6	3.1
Lack of physical activity	32	16.5
Stress and fatigue	11	5.7
Other	5	2.6
Total	194	100

The most commonly reported effect of neck pain on professional performance was the need for frequent breaks, cited by 50% of respondents. This was followed by a reduction in the number of patients handled daily (22.1%), and reduced concentration (15%). Decline in productivity was reported by 7.7%, while negative effects on treatment quality were the least frequent (3.1%). Other effects, such as "all of the above"

or general discomfort, were noted by only 2.1%.

The most frequently adopted measure was improving posture and ergonomic conditions (38.1%). This was followed by stretching exercises (16.5%), use of analgesics (10.8%), and physical therapy (7.7%). Less common measures included the use of more ergonomic tools (3.6%) and other practices such as cupping and adjusting sleep routines (2.6%) as shown in table 5.

Table 5: Types of Measures Taken

Measures Taken	No.	(%)
None	40	20.6
Stretching exercises	32	16.5
Improved posture and ergonomics	74	38.1
Use of more comfortable tools in the clinic	7	3.6
Physical therapy sessions	15	7.7
Use of analgesic medication	21	10.8
Other (e.g., cupping therapy, sleep)	5	2.6
Total	194	100

Only 23.7% of dentists reported visiting a specialist to treat neck pain, while the vast majority (76.3%) had not sought specialized medical consultation.

these result highlight the need for improved awareness to insure proper diagnosis for neck pain and arrange visiting for specialist of neck pain to seek diagnosis and best treatment management (Table 6).

Table 6: Visiting a Specialist for Neck Pain

Visit to a Specialist	No.	(%)
Yes	46	23.7
No	148	76.3
Total	194	100

Regarding physical exercise to reduce neck pain, only 34% of participants

reported engaging in physical exercises to reduce neck pain, while 66% do not practice such routines. This suggests a need for increased awareness regarding the role of physical activity in preventing occupational musculoskeletal issues (Table 7).

Table 7: Practicing Physical Exercise to Reduce Neck Pain

Practice of Physical Exercise	No.	(%)
Yes	66	34.
No	128	66.0
Total	194	100%

DISCUSSION

The findings reveal that the prevalence of neck pain among dentists reaches 81.8%, reflecting a common issue affecting this professional group. The heavy reliance on posture modification appears to play a major role in alleviating such pain. Accordingly, there is a clear need for effective preventive and therapeutic strategies to reduce its prevalence and improve the professional quality of life of dentists. According to Sulimany (2021) around 41% of dental interns in Saudi Arabia reported experiencing cervical pain . However, Tariq (2020) found out that 62% of dentists working in different settings of Faisalabad reported neck pain which determined are a major work-related issue and one of the leading causes of disability among dental professionals , causing in reduced productivity and early retirement [10,12] .

In the present study, factors such as main dental occupation, hours worked, causes of pain and risk factors and physical activities have been included in the questionnaire. Notably, respondents with 5–10 years of experience were suffered of neck pain

that largest group, accounting for 40.2% of the sample, while those with more than 20 years of experience constitute the smallest group at 3.6%, which resembles with result of another study conducted in Libya 2015 by Arheiam where found that the participants were working in private sector for long service hours as full time employee. Forty percent of the participants had more than 10 years providing dental healthcare services had cervical pain.

According to study conducted by Ohlendorf, et al. (2020), dental examinations or treatments need awkward body positions, placing strain on the musculoskeletal system and causing cervical pain among dentists. In addition, Methods of managing neck pain vary between posture adjustment and reducing working hours. Statistics show that 60.3% of dentists rely on posture modification as a primary method, while 14.4% prefer to reduce working hours. This emphasis on functional adjustments reveals the importance of raising awareness about other preventive and therapeutic methods that may be more effective.

Moreover, the results showed that 76.3% of dentists experiencing neck pain had not visited a specialist for treatment, despite their pain while 23.7% had sought treatment. This reflects the need for general awareness of the need to seek medical help, but also highlights the need to raise awareness about the importance of early diagnosis and treatment to avoid complications which is similar to a study done by [10].

The present study found the Common preventive measures to improve neck health among dentists include 38.1% relying on improving sitting posture, 16.5% on stretching exercises, and only 10.8% on the use of painkillers. These

figures reflect the prevalence of self-directed preventive practices, which calls for enhancing training programs to raise awareness and provide more effective tools for prevention.

Statistics indicate that only 3.6% of dentists use comfortable or improved tools in their clinics to relieve neck pain. This reflects a weak reliance on improving the professional work environment, highlighting the need to invest in the development of clinical tools and equipment as part of preventive solutions.

The results showed an absence of adopting modern technologies such as smart chairs or sensor-based systems in most clinics, despite the importance of these tools in preventing neck pain. The recommendations call for the adoption of these technologies and the application of scientific research findings to improve the work environment and reduce occupational injuries. In addition, most dentists rely on traditional methods for treating neck pain, such as posture improvement and light exercises, with limited use of tools or modern technologies. These results indicate the need to update professional training programs to include the latest techniques and technologies in line with current medical advancements.

It is worth mentioning that the outcomes have shown that 40.2% of dentists who suffer from neck pain have 5 to 10 years of professional experience. This group is considered most vulnerable due to the nature and pressure of the work. Therefore, this group requires intensive professional awareness and training programs focusing on injury prevention in the workplace. The majority of dentists, at a rate of 76.3%, consider it important to visit specialists for neck pain treatment. This reflects a high level of awareness

of the importance of proper diagnosis and treatment, but the need remains to encourage early prevention and raise awareness about the importance of timely intervention to avoid condition progression. This study results indicate an urgent need to activate professional training programs aimed at promoting the health of dentists and improving their work environment. The recommendations include raising awareness about cervical pain among dentistry profession as well as improving the work environment through the adoption of modern technologies such as smart chairs, and the development of comprehensive occupational policies to enhance the prevention of neck pain, thereby contributing to reducing injuries and improving the quality of care provided. The outcomes of this study are based on self-reported questionnaire which is liable to recall bias and gives answers with respect to the incidence of symptoms rather than their actual frequency or intensity. Despite this, the use of self-report through questionnaires is universal in medical research and is supposed to be reliable measure to collect data. Although the response rate in the present study is high, the lack of reliable data on registered dentists in Libya and the inoperative mail service in the country hindered conducting mail survey and consequently a wider distribution of the study sample. On the other hand, there is a need for more studies to determine the role of awareness and regular training programs on proper occupational postures for dentists to reduce cervical pain.

CONCLUSION

In conclusion, cervical pain represents a significant health issue for dental

professionals in Libya. The data provide beneficial insights into the prevalence of neck pain and the postures that can increase the pain, however, the results signpost that the most frequently adopted measure include improving posture and ergonomic conditions engaging in stretching exercises using analgesics and seeking physical therapy.

RECOMMENDATIONS

Based on the research findings, the following recommendations are suggested.:

- Activating regular training programs on proper occupational postures for dentists to reduce cervical strain during work.
- Modifying clinical environments, including the design of chairs and tools, to be more ergonomically and functionally appropriate.
- Encouraging dentists to incorporate light exercises and stretching into their daily routine, particularly those targeting neck and shoulder muscles.
- More research studies to determine the role of therapeutic exercise in decreasing cervical pain among dentists.
- Increasing awareness of the importance of short breaks between treatment sessions, due to their role in reducing muscle tension and improving professional performance.
- Supporting occupational health initiatives by medical associations and relevant institutions, including regular visits for physical therapy and health education.
- Supporting applied experimental research on new technologies for alleviating neck pain (such as smart chairs or posture sensors), and adopting their findings in both public and private clinics.

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