An-Najah National University

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RISK FACTORS RELATED TO NECK PAIN AND DISABILITY AMONG PALESTINIAN DENTISTS IN THE WEST BANK

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Dedication

“I dedicated this thesis to the sake of Allah, and my great teacher and messenger, Mohammed (May Allah bless and grant him), who taught us the purpose of life.

To my homeland Palestine, the intimate womb”

“My great parents, who have always loved me unconditionally and whose have taught me to work hard for the things that I aspire to achieve. To My teachers, to all my family, and my friends who encourage and support me, all the people in my life who touch my heart, I dedicate this research”.

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“First, I give all the glory to God, the source of my strength, for granting me both the mental and physical endurance to complete this monumental task”.

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“My teachers, I extend special thanks and gratitude to you for your assistance, encouragement, and support”.

“Then, I would like to thank my entire family, especially my loving parents, for their love, understanding, and support“

“To everyone who gave me the moral support for the completion of this task, Thank you”.

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

RISK FACTORS RELATED TO NECK PAIN AND DISABILITY AMONG PALESTINIAN DENTISTS IN THE WEST BANK

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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Date: 13.8.2022

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ABSTRACT

Introduction: Neck pain and disability, one of the most widespread signs of musculoskeletal problems, it is the second largely frequent conditions associated with spine disorders. It affects people of all ages after back pain. Occupations involving frequently repetitive aspects of movement, such as high physical workloads combined with psychosocial stress, are widely associated with musculoskeletal disorders that occur as a result of specific work-tasks and uncomfortable postures that professionals' practice.

The purpose of this study was to assess the prevalence of and risk factors for neck pain and disability among dentists in the West Bank, Palestine. Also, the study sought to assess the link between demographic factors and work condition and neck disability among dentists in the West Bank.

Method: The researcher conducted a cross-sectional study c between October 1, 2021 and May 1, 2022. A structured neck disability index 10-item questionnaire was administered to 350 dentists, selected randomly, from Ramallah, Hebron, and Nablus districts. The questionnaire was completed face-to-face, and a total of 340 (97.1%) dentists completed it.

Results: The mean age of the participants was 29.6±6.1 years. The prevalence of neck disability index was high (75.3%) among dentists. Seventy (20.6%) of dentists reported having severe neck disability. Factors that were significantly associated with neck disability included age, gender, years of work, number of working hours per day, BMI, exercise at work, number of patients treated daily, and working position ($P< 0.05$).

Conclusion: There is a high prevalence of neck disability among dentists in Palestine. The functional disability was mild, with a considerable percentage of dentists suffering from a severe disability. The study recommends implementation/ organization of specific occupational health education programs that cover refining of work organization, psychosocial coping skills, and ergonomic workplace adaptation, in order to prevent severe risks for health in this occupation.

Keywords: Prevalence; neck disability; dentists; risk factors; Palestine.

Chapter One

Introduction

1.1 Introduction

Musculoskeletal disorders (MSDs) are defined as “soft-tissue injuries caused by repetitive movements, force, vibration, and awkward positions that can affect the joints, nerves, muscles, tendons, and cartilage in the neck, limbs, and lower back” (Centers for Disease Control [CDC], 2022). The European Agency for Safety and Health at Work (EU-OSHA) counts Musculoskeletal Disorders (MSDs) to be the most common disease, influencing millions of workers and costing the public health system and the companies billions of euros (EU-OSHA, 2017). Approximately 32% of Palestinians aged 60 years and older have least one musculoskeletal condition (Najjar, Warasna, Kitaneh, Abu-Sharar, Sawalha, Jamous, et al., 2021).

The most frequent area of Musculoskeletal Disorders are neck, low back, and osteoarthritis (Cieza, Causey, Kamenov, Hanson, Chatterji & Vos, 2020). Neck disability is the second greatest frequent spine disorders, affecting people of all ages after back pain (Hill, Aboud, Elliott, Magnussen, Sterling, & Steffens et al., 2018; Khosrokiani, Letafatkar &Sokhanguei, 2018). The clinical picture is dominated by neck disability, which is aggravated by isolated or joint movements of the cervical spine and shoulder-scapular girdle. Palpation reveals increased tone and painful tenderness of local muscles and limited range of motion of the cervical spine. The duration of neck disability is directly related to the cause of the discomfort (Jackson, 2010; Vlak & Vlak, 1992).

Occupations involving commonly repetitive aspects of movement, and also high physical strains combined with psychosocial stress, are commonly correlated with MSDs that occur as a result of certain work-tasks and awkward positions that personnel undertake (CCOHS, 2017, EU-OSHA, 2017). Indeed, among all healthcare workers, dentists have the overall prevalence of MSDs (Alnaami et al., 2019).

The nature of dental procedures, which incorporate static postures (standing or sitting), prolonged improper postures, repetitive gripping of small-sized instruments requiring precision (Šćepanović, Klavs, Verdenik, &Oblak, 2019), and long work sessions

(Ohlendorf, Erbe, Nowak, Hauck, Hermanns, Ditchen et al., 2017). This, together with other risk factors, has resulted in the dental profession being one of the professions with the greatest possibility of having Neck disability (Ohlendorf et al., 2016; Šćepanović et al., 2019; Zhou et al., 2021).

The growing cases of MSDs among dentists has been related to a variety of sophisticated risk factors, containing personal, biomechanical, and psychosocial factors. Biomechanical factors include recurring tasks performed upon a long episode of time, as well as awkward and static positions (Botha, Chikte, Esterhuizen, & Barrie, 2014). Individual factors include demography (e.g., age, gender, BMI) and lifestyle (as physical exercise and smoking). Finally, psychosocial factors are divided into three categories: individual characteristics (e.g., job satisfaction, culture, social class, and so on), factors related to work organizational (e.g., mental demand, working load and hours), and external work environment duties and responsibilities to family and friends (Cho, Cho, & Han, 2016).

The work postures as preserving the head rotation, shoulder, upper arm abduction neck bending, and the high proportion of patient treatment hours per week among dentists professional may contribute to headaches and Neck disability (Martinez-Merinero, et al., 2020). The Neck Disability Index (NDI) is a 10-item questionnaire that measures a patient's self-reported neck pain related disability. It was the first of its kind when it was published in 1991 and was based on the Oswestry Low Back Pain Disability Questionnaire. The NDI is the most widely used, translated and oldest questionnaire for neck pain.

A dentistry is a type of health care professional who performs daily tasks that require a high level of skill and prolonged sitting. Rhythmic movements of the upper limbs whereas twisting the trunk forward to concentrate on tiny work parts for patients' oral care are examples of work aspects (Ayatollahi, Ayatollahi, Ardekani, Bahrololoomi, Ayatollahi, Ayatollahi et al., 2012). According to review from 23 articles including (2,531) dentists from Iran, the frequency of MSDs was 51.9 percent in the neck, 37.3 percent in the lower back, 33.7 percent in the wrist or hand, 33.4 percent in the chest, and 33.2 percent in the shoulder (ZakerJafari & YektaKooshali, 2018). It was reported that neck disorders (73.0%) were constructed on the study of 202 dentists in China (Zhou, Zhou, Aisaiti, Wang, Zhang, Svensson, & Wang, 2021). According to a study of

80 licensed dentists in Saudi Arabia's Ha'il area, the lower back (73.5%) was the most area of reported MSDs, then the neck (66%), and the shoulders (43.3%) (Aljanakh, Shaikh, Siddiqui, Al-Mansour, & Hassan, 2015). Furthermore, 88 percent of dentists in China reported one MSD and 83.8 % reported that they have Neck disability (Feng, Liang, Wang, Andersen, & Szeto, 2014).

Occupational MSDs are the prominent cause of disability and disorder in dentists, and are going to disturb their work and personal lives (Biswas, Sachdev, Jindal, & Ralhan, 2012), as well as reduce the quality of work and productivity, and may have resulted in early retirement (Cohen & Hooten, 2017; Hagen et al., 2011; Vos et al., 2012).

Furthermore, symptoms of MSDs expand with experience (Dantas& de Lima, 2015; Kierklo, Kobus, Jaworska, & Botuliński, 2011). However, there is still no assessment of the prevalence or risk factors of Neck disability among dental professionals in Palestine. The current study therefore purposes to assess the prevalence and risk factors of Neck disability among dentists in the West Bank.

1.2 Problem statement

According literature review, most dentists capture Neck disability as a result of the nature of their work, which necessitates high demands on focus quality and vision in order to deal with very restricted areas. Furthermore, ignoring the fact that most dentists are unaware of the importance of putting into practice what they have learned about proper and healthy posture, which is usually explained in books and taught in universities.

After searching various databases, there were no studies on this topic that had been conducted in Palestine. As a result, the current study was conducted to investigate the prevalence of Neck disability among dentists in Palestine and the risk factors associated with neck pain, such as age, gender, job position, body mass index, daily working hours, and years of experience. Furthermore, the findings may aid in the design of an appropriate intervention in the future.

1.3 Significance of the study

The current study was conducted to assess the prevalence of Neck disability among dentists in the West Bank. It explored the risk factors associated with neck discomfort in dentists. Identifying and understanding the risk factors will aid in providing proper interventions such as educational programs or training on ergonomics practice to lessen the occurrence of musculoskeletal pain.

Measuring disability is an important component in the management of dentists with neck pain. This study will provide Palestinian and other Arab dentists with database information that health policymakers and leaders may use to develop planning strategies in order to improve dentists' health.

1.4 Purpose of the research

The purpose of this study was to assess the prevalence and risk factors of Neck disability among dentists in the West Bank.

1.5 Research questions

The following questions are set as a guideline to fulfill the aim:

1. What is the prevalence of Neck disability among dentists in the West Bank?
2. Are there differences between Neck disability and disability and the demographic characteristics of dentists in the West Bank?
3. Are there differences between Neck disability and disability and the work conditions of dentists in the West Bank?

1.6 Conceptual and operational definitions

Prevalence is "the part (percentage or proportion) of a defined population affected by a particular medical disorder at a given point in time, or over a specified period of time" (Bhopal, 2016).

Neck Disability Index

Neck Disability index (NDI) is an instrument to measure patient-reported disability secondary to neck pain (Vernon et al., 1991).

In the current study, Neck disability was assessed with a questionnaire, the Neck pain disability. This consists of ten items that cover pain intensity, car driving, lifting, personal care, work, reading, headache symptoms, and concentration.

Risk factors: The World Health Organization (WHO) defines a risk factor as "any attribute, characteristic, or exposure of an individual that increases the likelihood of developing a disease or injury" (WHO, 2017).

In the current study, risk factors for Neck disability among dentists were assessed with a questionnaire consisting of demographic and work-related characteristics.

1.7 Variables of the study

Dependent variable

Neck disability was measured by Neck Disability index (NDI) that composed of Pain Intensity, Personal Care, lifting, reading, headaches, concentration, work, driving, sleeping, and recreation.

Independent variables

Demographic data was composed of age, marital status, gender, residence area, height, weight, experience and specialty

Working conditions composed of working hours per day, Number of patients treating/ day, working position, sufficient rest breaks between patients, bending or twisting head and back in an awkward way, Work on a chair with functional light, Time need to spend at the same position for each patient, Exercise to adhere to the correct posture during work.

Health history and behaviors of dentists composed of Playing sport, Smoking, chronic disease.

1.8 Dental Care in Palestine

The Palestinian Dental Association (PDA) and the Ministry of Health (MoH) primarily govern the dental health sector in Palestine. The Ministry of Health supervises the licensing of dentists. In addition to dental clinic services, the Ministry of Health offers oral hygiene training and screening for school students.

The Palestinian Dental Association was founded in 1952 as the Jordanian Dental Association, with offices in Jerusalem and Amman. The Palestine Dental Association is one of Palestine's oldest professional organizations.

The purpose of founding this Association is to help its participants through:

- "Upgrade the profession, protect, defend, and organize it".
- "Cooperation with the Ministry and all relevant institutions and bodies to promote the level of health status".
- "Gather the doctors and preserve their rights and dignity".

There are 6.6 dentists in Palestine per 10,000 people. This proportion is lower than Syria, Lebanon, and Jordan but more than Egypt, Bahrain, and Oman (WHO, 2015).

According to the Palestinian ministry of Health (2020), the number of dentists in the West Bank in the year 2019 was 3537 dentists.

1.9 Literature review

1.9.1 Prevalence of Neck disability among Dentists

The significance of neck disability, particularly in the dental profession, as discussed below, is to assess the prevalence of Neck disability and recognize the risk factors among dentists. The frequency of back and Neck disability among dentists is greater than the overall population, which may be related to threatening positions that can be reached through clinical work and which may be excessive in pediatric dentists (Shetty, Shetty, Hegde & Babu, 2015).

The frequency of Neck disability among dentists is sharp and well documented in the literature. Kumar, Kumar, and Baliga (2013) performed a cross-sectional study among 536 dentists in India to assess the frequency of self-reported Work Related Musculoskeletal Disorder (WRMSD). The data was gathered using a self-administered tool with 27 points grounded on the Nordic questionnaire for screening WRMSDs. The findings revealed that Neck disability was (75.74%), the lower back (72.0 percent), shoulder (69.4 percent), wrist/hand (73.1 percent), upper back (18.65percent), elbow (7.5 percent), hip (29.9 percent), and ankle (12.3 percent). The number of affected regions was two (82.83%), three (51.86%), and four or more (15.1%). Recurring symptoms were also reported by 76.11 percent of dentists.

A cross-sectional was conducted on 211 dentists from different hospital sand private clinics of Lahore. Data collection was done through numeric pain, rating scale and Neck disability index. Results revealed that 56.9% of dentists experienced neck pain. The means score of numeric pain rating scale is 2.36±2.49 and for neck disability index is 12.38±10.41 (Majeed, ul Hassan, Javed, Ilyas, Muzaffar, Nayyab, et al., 2021).

Another a cross sectional study was conducted on 50 dentists working in government and private hospitals and clinics in Faisalabad/ India. Data was collected by using neck pain disability index. Results revealed that 62% of the dentists suffered from neck pain. Severity of the pain was reported as 36% had mild pain and about 48% had mild disabilities (Tariq, Kashif, Mehmood, & Quraishi, 2020).

In an online survey conducted by Kim, Lee, Kim, & Nam, (2021) on 109 dentists in Korea. Results revealed that both pediatric dentists and general dentists mainly complained of musculoskeletal disorders in the neck, shoulders, wrists, and back. Most pediatric dentists usually suffered from back pain due to their unbalanced posture while giving dental treatments. Pediatric dentists in sedative treatment felt more pain in particular part of their body, such as neck and shoulder.

In a descriptive-analytical study conducted at the time of the coronavirus (Covid-19) outbreak on102 dentists in Zahedan/Iran. An online questionnaire was sent to them through cyberspace. The intensity of pain was measured by the VAS scale and some items were measure the disability of the back and neck. Results revealed that dentists have neck pain at 77.5% and backache at 72.5% were the most prevalent pains, and

forearm pain at 12.7% had the least prevalence. The disability in the neck was equal to 15.545% and was equal to 12.81% in the back (Shahraki Ebrahimi, Aghaei Soltani, Hosseinifar, Maserat, Saeedi Robat, & Hojati, 2021).

Also, in cross sectional study was conducted in north India on 74 randomly selected dentists. Personal and occupational characteristics as well as the prevalence and risk factors of neck pain were collected. Subjects were assessed by visual analogue scale and neck disability questionnaires for pain intensity and functional disability of neck, respectively. Results revealed that the prevalence of neck pain and neck disability in dentists appears to be high (Bansal, Bansal, Kaur, & Malik, 2013).

Chandra, Shahi, and Bhargava (2015) performed a cross-sectional study on the occurrence, extent, and severity of neck and lower back disability among 121 dentists from three dental institutions in Patna, India. According to the findings, 72.8% of dentists have exposed the condition at some point during their dental career. Dentists reported 38.0% lumbar discomfort, 13.02% cervical pain, and 24.0% overall pain.

A similar study of 200 dentists in Maharashtra district in India found that approximately 115 (57.5%) complained of musculoskeletal pain. Back pain was reported by 34.83% of males and 41.57% of females, while Neck disability was reported by 23.60% of males and 34.80% of females (Bhagwat, Hegde, & Mandke, 2015).

Also, Ijaz, Khan, Ahmed, and Sadiq (2016) performed a cross-sectional study among 312 dentists in three different dental hospitals in Lahore, Pakistan, to assess the frequency of Neck disability. The data was gathered using the neck disability index. The most common complaint, according to the findings, was Neck disability. Mild pain was reported by 23.7 %, episodic moderate pain in 28.2% of cases, moderate pain in 10.6% of cases, severe episodic pain in 3.2 % of cases, and severe pain in 1.0% of the participants.

In addition, Isper Garbin et al. (2017) conducted a cross-sectional study to examine the frequency of work-related musculoskeletal disorders among 204 dentists working in community health clinics in the northwest of So Paulo, Brazil. The Nordic Questionnaire and work-related activities were used to collect data. The majority of the participants (81.4 percent) had musculoskeletal disorders, particularly in the lower back,

shoulders, and neck. Continuing to work when sick or ill, twisting the back in an awkward way, and acting in the same posture for lengthy extents of time were the most troublesome occupational risk factors. There was a strong correlation (r = 0.697) between pain intensity and the total score of disability caused by pain.

Another cross-sectional study was performed in Jordan to clarify the frequency of Neck disability among dentists working in public health facilities. The frequency of neck isability in Jordanian dentistry is estimated to be high. In all NDI items, extended working hours per week were correlated with more effect on the participant's ability. In this study, however, the NDI items did not correlate significantly with age, gender, or years of experience. Furthermore, except recreation, NDI was significantly correlated with the working status (i.e., sitting versus standing) with NDI items. Working in standing position resulted in greater levels of neck pain, such as difficulty working, increased pain intensity, sleeping, and providing self-care (Al Hadid, 2018).

A cross sectional study was conducted among 75 dental students, dental practitioners and dental faculties in Saveetha Dental College and Hospitals, Saveetha University. Results revealed that over 76% of the participants complained of neck pain. The more pain was found in endodontic (54%) followed by surgical procedures (20%) and orthodontic procedures (15%). Also, the results revealed that 55% of the participants' neck pain was relieved by medication, 32% of them by massage the area while 13% of them by acupuncture treatment (Vidulasri & Thenmozhi, 2020).

Moreover, a systematic review study was performed to assess the frequency of musculoskeletal disorders between dentists in Iran. The review analyzed 23 studies out of 2,531. The proportion of MSDs in Iranian dentists has been 51.9% neck, 37.3% lower back, 33.7% wrists/hands, 33.4% thorax, 33.2% shoulders, 17.6% knees, 12.9% feet, 12.9% in elbows, 11.9% thighs, and10.5% legs (Zakerjafari &YektaKooshali, 2018).

Another review investigated the frequency of musculoskeletal illnesses and discomfort in dental professionals in the Western world. 10.8% to 97.9% of dentists reported musculoskeletal illnesses and discomfort. The neck was the most commonly afflicted body area (58.5 percent), then the lower back (56.4 percent), the shoulder (43.1 percent), and the upper back (41.1 percent) (Lietz, Kozak & Nienhaus, 2018).

1.9.2 Prevalence of Neck disability among Dental students

MSDs symptoms have also been observed among dental students, indicating that these disorders may arise from working habits acquired early during clinical training (Vijay & Ide, 2016).

In a cross-sectional observational study conducted on 100 Dental students which include final year students, interns & Post-graduate students who work at least 4-5 hours per day since last 1 year. The incidence of neck pain and functional disability is observed using "neck disability index". The results revealed that prevalence of neck pain among dental students was 42%. Among which 37% had mild disability and 5% had moderate disability (Chitara & Nishita, 2017).

Also, a cross-sectional study conducted on 232 students, between students of 1st, 3rd, and 5th of dentistry, medicine and nursing. Data collection was performed by the cervical disability (neck disability index to all the students. Results revealed that 91% of surveyed students of dentistry, 63% of the students of medicine and 70% of nursing students showed some degree of disability (Córdova, Steffens, Jorquera, Mardones, & Fernández, 2015).

Another, cross-sectional study was conducted by Aghahi, Darabi, & Hashemipour (2018) on 199 dental students of the 3rd, 4th, 5th, and 6th year, Kerman University of Medical Sciences/Iran. Results revealed that over 69% of the dental students complained of pain in at least one part of their body. The clinical areas where more pain was found were endodontics and pedodontics. Furthermore, there was a statistically significant relationship with the final Rapid Entire Body Assessment score in different body parts and the participants' demographic data (sex, age, weight, height, sports, and smoking).

A cross-sectional study was conducted on 377 dental students and interns at the dental school of King Abdulaziz University, Jeddah, Saudi Arabia. Data collected using the Nordic Back Pain Questionnaire. Results revealed that 69.2% of the participants have neck pain, followed by shoulder pain 67.1%, and lower back pain 65% (Felemban, Sofi, Alhebshi, Alharbi, Farsi, Abduljabbar, et al., 2021).

A longitudinal prospective study was conducted on 73 dentistry students to assess the five-year development of most common musculoskeletal complaints among dentistry students during the whole length of their studies and to analyze the impact of some potentially associated risk factors at Czech Republic. The most frequent areas of complaints were neck (61.6%) and lower back (49.3%). The results of this study showed that neck, as well as lower back pain, are significant problems for dentistry students (Hodačová, Pilbauerová, Čermáková, Machač, Schmidt, Hodač, et al., 2022).

1.9.3 Risk factors of neck disability among Dentists

Triggering the spark of neck disability in dentistry is usually attributed to a complex combination of multiple risk factors. Personal characteristics of the dentist, including age, sex, weight, and height, in addition to work environment conditions such as prolonged static postures, working long hours, duration of dental practice, and psychological stress (high job demand and absence of supervise over work), all represent the main risk factors accompanying with the occurrence of neck disability and other MSDs (Kazeminasab, Nejadghaderi, Amiri, Pourfathi, Araj-Khodaei, Sullman, 2022; Zhou, et al., 2021).

The following are the main characteristics of dentists involved with an increased risk of neck disability and other MSDs and well documented in the literature.

1.9.3.1 Age and Neck disability

Maximum muscle strength is believed to increase between the ages of 20 and 30 (Metter, Lynch, Conwit, Lindle, Tobin & Hurley, 1999). According to the evidence, the prevalence of chronic neck disability increases in middle age and then declines (Fejer & Leboeuf-Yde, 2012; Hogg-Johnson et al., 2008). Several studies (Andersen et al., 2008; Sjøgaard et al., 2006) have consistently provided a correlation between neck disability and decreased neck muscle strength. Furthermore, numerous randomized controlled trials have found that neck muscle-strengthening rehabilitation programs reduce neck pain (Andersen, Andersen, Skotte, Suetta, Søgaard, Saltin, et al., 2014).

As people age, the mass and density of their bones gradually decrease due to the loss of calcium and other minerals in their bones. Fluid in the joints may decline, creating them less flexible. The muscle fibers shorten, and lost muscle tissue may be substituted with hard fibrous tissue, reducing the ability of muscles to contract (Ferrucci et al., 2016).

Pejčić et al. (2017) analyzed the risk factors and preventive measures for Musculoskeletal (MS) disorders that are of principal significance to dentists in order to increase their quality of life and work productivity. The findings indicated that older dentists' age, work experience, and female dentists and dentists with children increase the risk of developing MSDs. Also, Ajwa, Khunaizi, & Orayyidh (2018) found that there was a strong correlation between cervical pain and the age of the practitioner and was associated with the level of education, working sector, and number of patients per day.

Rickert et al. (2021) reported that dental specialists below 50 years of age displayed lower proportions when matched to older dental specialists, with increased between 51–65 years.

1.9.3.2 Neck disability and Sex

Previous studies also indicate that MSD are especially common among women working within human services (Krishnan, Raju, & Shawkataly, 2021). Sex differences in the prevalence of musculoskeletal pain, including neck pain among various population, has been reported in many studies, which is proposed to be due to sex differences in pain sensitivity and muscle anatomy and pain sensitivity (Kazeminasab, et al., 2022; Nagai, Schilaty, Krause, Crowley, & Hewett, 2020; Paananen, O'Sullivan, Straker, Beales, Coenen, Karppinen, 2015). Furthermore, some authors have noted that sex differences in behavioral and psychological risk factors can influence musculoskeletal pain, e.g., females report a higher likelihood of poor posture and higher rates of co-morbid psychological distress (Bento, dos Santos Genebra, Maciel, Cornelio, Simeão, & de Vitta, 2020; Côté, 2012; Paanalahti, Holm, Magnusson, Carroll, Nordin, & Skillgate, 2014).

According to published reports, females are less likely to be physically active than males and spend more time in sedentary activity (Ge, Xin, Luan, Zou, Liu, Bai, & Gao, 2019; Kokic, Znika, & Brumnic, 2019). Additionally, under stressful conditions at medical universities, female students tend to suffer more from mental health problems (e.g. psychological distress, depression and anxiety) than their male counterparts (Merlo, Curran, & Watson, 2017; Rodríguez-Roca, Subirón-Valera, Gasch-Gallén, Calatayud, Gómez-Soria, & Marcén-Román, 2021).

The sex differences in musculoskeletal disorders have been clinically and experimentally established in several studies. Mills, Nicolson, and Smith. (2019) reported that women are more sensitive and have more musculoskeletal problems than men, and they are more susceptible to the development of musculoskeletal disability problems. In dentistry, female dentists are at greater risk of emerging occupational MSDs due to their inherent gender differences (Ohlendorf et al., 2020). Besides, Al-Mohrej et al. (2016) stated that female dentists in Saudi Arabia were about 1.5 times more probable to experience shoulder pain than male dentists (Al-Mohrej et al., 2016). Another study in conducted in Saudi Arabia confirmed that Female sex was identified as a potential risk factor for cervical pain (Sulimany, 2021).

One possible explanation is that women create more muscle force as a result of different approaches. Due to hormonal and reproductive factors, as well as their estrogen level, female dentists have a higher frequency of chronic musculoskeletal disorder as well as a higher disability frequency and severity than male dentists (Valachi, 2008). Also, it may be related to biological, physiological, psychological, and cultural differences that have been hypothesized (Pickering, Jourdan, Eschalier, & Dubray, 2002).

In a cross-sectional study to determine the prevalence of the musculoskeletal problems within dental students was conducted at a UK dental institute on 398 dental students. Data collection was applied using a modified Nordic pain questionnaire. The results revealed that More females reported neck pain (58% versus 37%, P <0.001) and higher 'average pain intensity' (mean 4.02, sd 1.82 versus 3.43 sd 1.55, P = 0.012. Daily stretching was used by 55.7% of respondents, and this positively correlated with 'average' and 'worst pain intensity' (P = 0.096 and P = 0.001) scores. Eighteen percent sought professional help to manage pain (Vijay & Ide, 2016).

1.9.3.3 Time spent working as dentist

Some reviewed studies confirmed that years of experience and working long hours in dental practice are important risk factors for developing neck disability. A study conducted in Minia University Hospitals stated that working hours, extended period of employment, and increased work load experienced significantly higher musculoskeletal disoerders (Hassan et al., 2017). Harris et al. (2020) reported a positive association between the number of years in practice and the incidence of MSDs. Therefore, dentists should be instructed to join stress management courses to help relieve stress (Pouradeli, Shahravan, Eskandarizdeh, Rafie & Hashemipour, 2016). However, other studies have verified a negative association between musculoskeletal disability and experience years among dentists (Finsen, Christensen, & Bakke, 1998; Leggat, & Smith, 2006).

1.9.3.4 Work schedule

Heavy work schedules with no rests between patients or an increasing number of patients seen daily show to be associated with the risk of musculoskeletal illnesses and discomfort in dentists. Also, working hours per day were associated with neck pain and disability (Feng, Liang, Wang, Andersen & Szeto, 2014).

In a study reported, having no rest between treatments raised the risk of musculoskeletal disability by 6.51 times (Pejčić et al., 2017). Fals-Martnez et al. (2012) approved this result among South American dentists. Maintaining concentration, inadequate breaks, and constant time pressures may generate stress for dentists because of the need to schedule as many appointments as possible, or because it interferes with time with family or other non-work-related activities. As a result, musculoskeletal disorders and discomfort may develop.

1.9.3.5 Working posture

Working posture of dental practice is a major risk factor for evolving neck disability (Kim, Wiest, Clark, Cook, & Horn, 2018). One of the most common abnormal postures in the head and neck area is forward head posture (FHP) (Chiu, Ku, Lee, Sum, Wan, Wong et al., 2002; Good, Stiller, Zauszniewski, Anderson, Stanton-Hicks & Grass, 2001). In this situation, the head is deviated from the normal state and placed in the sagittal plane ahead of the trunk (Kendall, McCreary, Provance, Rodgers, & Romani, 2005). Maintaining a constant posture for a long time requires muscle contraction to

keep the body away from gravity (Ratzon, Yaros, Mizlik, & Kanner, 2001). Staying in a constant posture for a long time, if repeated continuously, can lead to pain and damage (Kendall, et al., 2005; Motialla, Moslemi Haghighi, Ghanbari, Amir Moezi, & Saadat, 2013). Also, the FHP increases the compressive force on the zygapophysial joints of the neck, the posterior part of the vertebrae, and changes in length and strength of connective tissue due to the stretching of the anterior cervical structures and shortness of the posterior muscles as well as diminished tension production capacity of muscles. All these ultimately can lead to pain (Kendall, et al., 2005; Motialla, et al., 2013).

A study that examined the effect of ergonomics on cervical neck pain found that the degree of neck region overload depends on the technique used by the dentist, the ergonomic conditions, and the long-lasting maintenance of a static body position (Płocki, Pikuła, Banaś, & Kotela, 2015). The extreme postures that may be attained during the clinical work and which may be extreme in pediatric dentists (Shetty, Shetty, Hegde, & Babu, 2015).

Chitara & Nishita, (2017) concluded that postural problems were leading cause of neck pain among dentists. The study of India stated that there was a strong association between continued work postures and symptom areas for disability (Kumar, Kumar, &Baliga, 2013). Occupational risk factors as perceived by dentists were bending or twisting the back in an awkward way, continuing to work when injured or hurt and working in the same position for long periods (Isper Garbin, Soares, Arcieri, Saliba Garbin, & Siqueira, 2017).

In a cross-sectional study was conducted on 300 randomly selected dentists at Tehran city revealed that prolonged sitting, awkward postures and repeated movements were the most significant aggravating factors of neck disability (Rahmani, Amiri, Mohseni-Bandpei, Mohsenifar, & Pourahmadi, 2013). Also, Bakhsh et al. (2021) highlighted that factors associated to work conditions (e.g., "lifting heavy objects", "keeping an uncomfortable posture for long periods of time", and years of experience were confirmed to be important risk factors for progressing MSDs. Also, Hassan et al. (2017) reported that the mainly widespread factors that led to the experience of MSDs were long duration of employment, prolonged static posture, and increased work load and working hours. The frequency of neck disability among dentists in Thailand has increased with high ergonomics risk (Chaiklienga & Suggaravetsiric, 2015).

Furthermore, the frequency of musculoskeletal disorders and disability among dental professionals in Western countries increased as a result of a large number of treated patients, administrative work, an awkward working posture, vibration, and repetition (Lietz, Kozak, &Nienhaus, 2018).

1.9.3.6 Weight and obesity

Body weight was identified to be an important aspect in improving workplace ergonomics. A study performed by Sethi, Sandhu, and Imbanathan (2011) revealed that persons with a higher Body Mass Index (BMI) had decreased postural steadiness. Elevated BMI was observed to be correlated with a greater risk of work-related musculoskeletal problems in this study. Being overweight puts additional mechanical and physical strain on the body's tissues, increasing pressure on the spinal cord. Obese people, particularly those who require upper-limb tasks, reported an increased risk of occupational injuries.

Nadri and Fasih-Ramandi (2016) reported that there was a correlation between pain amount and disability index for the neck and low back, as well as exercise and body mass index (BMI). Overweight dentists seem to be exposed to neck and back pain more than normal participants. Also, individual factors height and weight are important risk factors for neck and back pain (Wali, Mikael, & Bakr, 2018).

When a dental practitioner is stressed, spinal muscle activity rises. Stressful circumstances are associated with the patient’s performance. Treating an uncooperative patient may create anxiety about treatment failure, resulting in a stressful situation for the dentist and a decreased possibility that ergonomic principles will be followed. Dentists are still at risk of getting musculoskeletal symptoms (Custódio, Silva, & Brandão. 2012).

1.9.4 Prevention of Musculoskeletal Disorders in Dental Professionals

For dental professionals, disability related to the increase of MSDs is widespread. This disability is frequently neglected, resulting in loss of productivity, a change of career, reduced work hours, and life-altering illness. Literature has presented suggestions on how dentists can avoid or relieve disability accompanying with musculoskeletal disorders (Chismark & Hung, 2015; Sharma et al., 2016; Zemp et al., 2013). Preventive

actions at the workplace should promote good musculoskeletal health, and measures taken, both individual and organizational, to minimize the risk of high, persistent stress and work-related pain (Marklund, Mienna, Wahlström, Englund, & Wiesinger, 2020).

The likelihood of acquiring MSDs can be decreased by choosing the proper chair, instrument design and grip, correcting posture, exercise, lighting and magnification.

Using the proper position of work while doing dental procedures permits the cervical and back muscles to relax. Sharma et al. (2016) stated that working in a neutral position permits the joints to employ a full range of motion. The more uncomfortable and repeated a position is, the more likely it is that musculoskeletal disorders may arise. Dentists tend to assume awkward posture because of inappropriate sitting of the operator or patient (Sharma et al., 2016). It is recommended that patients lie supine with their feet slightly elevated over their heads. This positioning enables the operator to function efficiently in a neutral position while inciting the patient to tilt their head upward when dealing with the maxillary arch and downward when dealing with the mandibular arch. Inadequate patient positioning frequently results in the operator adopting an uncomfortable stance to gain access to the patient's oral cavity. By correcting the patient and patient chair, a neutral position can be attained and maintained musculoskeletal health (Rempel et al., 2015).

Using a correct grasp while manipulating the instrument helps the operator to apply a reduced amount of pinch strength and have well utilize of the instrument. Also, using an ultrasonic scaler to make gross debridement prior to hand scaling allows the operator to use less pinch force to eliminate remaining debris (Rempel et al., 2015). Lightweight, larger-diameter instruments have been shown to decrease the occurrence of disability in the upper extremities (Rempel et al., 2012).

Also, loupes are glasses with magnifying lenses fixed to improve inspection of the oral cavity (Rempel et al., 2015). Loupes assist in keeping the operator from leaning forward, which increases the danger of neck flexion.

In addition, stretching and relaxation techniques can help prevent the disability associated with musculoskeletal disorders. These activities help to relieve muscle

tension in the lower back, neck, and shoulders (Sharma et al., 2016). Stretching has several benefits for the body. “Stretching can serve to

- Improve the manufacture of joint synovial fluid
- Improve blood flow to muscles
- Preserve range of motion of the joint
- Generate a relaxation reaction in the central nervous system
- Improve nutrient to vertebral disks
- Decrease the creation of trigger points
- Identify tight forms that may be predisposed to injury
- Warm up the muscle before start to work” (Occupational HealthClinics for Ontario Workers Inc. [OHCOW], 2012)

Baheti and Toshniwal (2014) recommend exercises for neck, hand, back, and shoulders to avoid work-related musculoskeletal disorders among dentists. Also, practicing stretching exercises after finishing dental work, performing clinical procedures with magnifying loupes, avoiding excessive bending and twisting for improved oral accessibility, avoiding repetitive movements, and positioning the operator chair to maintain an ergonomic posture (Gaowgzeh, Chevidikunnan, Al Saif, El-Gendy, Karrouf, & Al Senany, 2015). Proper postural habits can contribute to prevention of neck pain and disability (Raoofi, Sarrafzadeh, Emrani, & Ghorbanpour, 2019).

Moreover, the dental light placing is serious to maintaining a neutral position when doing dental actions. The light should also be placed so that the operator can modify it as required (OHCOW, 2012).

Furthermore, instructing dentists about ergonomics can assist in preventing musculoskeletal disorders. Applying magnification devices throughout dental actions and managing proper position can assist reduce neck and low back disability (Amin et al., 2019).

1.9.5 Consequences of neck disability on health and cost

Neck disability is a crucial public health problem in the overall population (Safiri, Kolahi, Hoy, Buchbinder, Mansournia, Bettampadi, et al., 2020). It is one of the leading global causes of years lived with disability especially in the working population (Vos, Lim, Abbafati, Abbas, Abbasi, Abbasifard, et al., 2020). The costs, either sick leave or treatment costs, have a huge economic impact on health care systems worldwide (Bernfort, Gerdle, Rahmqvist, Husberg, & Levin, 2015; Kleinman, Patel, Benson, Macario, Kim, & Biondi, 2014). Neck disability also has an important economic impact, which involves job-related issues, lost productivity, and treatment expenditures. Neck discomfort and low back were the main health-care expense in the United States in 2016, with an estimated $134.5 billion (Dieleman, Cao, Chapin, Chen, Li, Liu, et al., 2020). In 2012, neck disability was accountable for job absences among 25.5 million Americans, who lost an average of 11.4 work days (Lezin & Watkins-Castillo, 2016). In 2017, the worldwide age-standardized and prevalence rate of neck pain were 3551.1 and 806.6 per 100,000, respectively (Safiri, Kolahi, Hoy, Buchbinder, Mansournia, Bettampadi, et al., 2020).

Also, the consequence of musculoskeletal pain for dental professionals' health could have an impact on work efficiency and working hours, increase the amount of sick leave, influence early retirement rates, and affect daily life activity (Moodley, Naidoo & van Wyk, 2018).

A study carried out by Oberg (1993) described that the cost of income in line for of musculoskeletal disorders among dentists is more than $40 million.

There is no standard therapy for neck disability. Nevertheless, various pharmacological and non-pharmacological treatments, such as yoga, massage, acupuncture, laser therapy, and aquatic therapy, have been recommended (Chou et al., 2016; Li, Liet al., 2019).

1.10 Summary

All previous studies concurred that musculoskeletal diseases have a critical
health and economic impact on dentists and dentistry field. The majority of the previous studies rated the prevalence of neck disability among dentists as high. This ranking would have been much more accurate if compared with other groups in the population,

such as physicians, health and dental assistants, or even with the entire population as a reference group. However, these studies had astonishing differences relate to the prevalence of neck disability and other MSDs.

An essential question arises here concerning the reasons for the disparities in prevalence in different countries. As previously stated, countries differ in their level of socioeconomic development. This variation will have an impact on dentists as well as other professions. Dentists who need to improve their socio-economic status will be subjected to more psychological stress and thus are more susceptible to the development of neck disability and other MSDs. These variations, along with the design and methods used in each study (including sampling and sample size differences, differences in age categories, male/female ratio within the sample, and variation in result inference), may provide a reasonable explanation of the variation of neck disability and other MSD prevalence in different countries.

Chapter Two

Methodology

Introduction

This chapter describes the research methods employed in the study, including the research design, population for the pilot study, sampling frame, instrument, data collection, and data analysis. Research methods must address the research questions and subsequently lead to the achievement of the research objectives.

2.1 Study design

The study design was a quantitative, cross-sectional study. Data was collected by utilizing a self-administered questionnaire distributed face to face to the target dentists. Using this design to achieve the purpose of the study, which was to assess the prevalence and risk factors of Neck disability among dentists in the West Bank. The study conducted between October 1, 2021 and May 1, 2022.

2.2 Setting

The study was carried out on dentists. Those dentists were selected from three districts in the three main regions of the West Bank/Palestine (South, Middle, and North). The West Bank had three geographic regions: south, middle, and north, with population of 3.120.44 million (Palestinian Central Bureau of Statistics, 2022). The three areas were selected as they were considered main districts and were composed of the largest Palestinian population.

2.3 Study population and sample

The study population was all dentists in the West Bank. The number of dentists was 3537 in West Bank (Ministry of Health, 2020). A clustered sampling method was used to generalize the results. The accessible population of dentists was 1500 dentists from district of Hebron (600 dentists), Ramallah (500 dentists), and Nablus (400 dentists) as mentioned by the Palestinian Dentists Association (2022). The sample size was computed by Raosoft (2008) software in which the size of the population was preserved at 1500, the response rate was set at 50%, whereas the confidence interval and margin of error were set at 95% and 5%, respectively and the effect size was set at 0.25 (medium effect). The recommended sample size was 306. To overcome the attrition rate

of the participants, 15% had to be added, so sample of 350 participants was recruited to achieve the purpose of the study. The number of participants from each district was proportionated with the percentage of dentists in that district, so a proportional allocation of participants was utilized to ensure that the sampling fraction within each stratum/district was equal (Levy & Lemeshow, 2013). Therefore, the sample composed of 93 dentists from Nablus, 140 from Hebron, and 117 from Ramallah districts.

2.3.1 Inclusion and exclusion criteria

The participants in the study were dentists who had experience of at least one year and volunteered to participate in the study. Participants were excluded from participating if they had a history of spinal malignancies, spinal deformities, musculoskeletal or neurological disease that could be a risk factor for Neck disability, spine trauma, or pregnancy as a female dentist.

2.4 Study instrument

A self-reported structured questionnaire was used to gather the data. The questionnaire contained of four parts (Appendix A).

Part One: Demographic characteristics of the dentists

Demographic characteristics was developed by the researcher according to the aim of the research. Demographic data was composed of age, marital status, gender, residence area, height, weight, experience and specialty

Part two: Working conditions of the dentists.

Working conditions of the dentists was developed by the researcher according to the aim of the research. It composed of Working hours per day, Number of patients treating/ day, working position, Sufficient rest breaks between patients, Bending or twisting head and back in an awkward way, Work on a chair with functional light, Time need to spend at the same position for each patient, Exercise to adhere to the correct posture during work,

Part three: Health history and behaviors of dentists.

It was developed by the researcher according to the aim of the research. It composed of Playing sport, Smoking, chronic disease.

Part four: Neck disability and Disability Index (NDI): The Neck Disability Index (NDI) was developed by Vernon & Mior (1991), and is composed of ten items: Personal Care; Work, reading; Lifting, Pain Intensity; Concentration; Headaches; Driving, Sleeping, and Recreation. Every item is marked from 1 to 5, for a total mark of 50, which is then multiplied by 2 to yield 100. The lower the mark, the less pain and self-rated disability. The Neck Disability Index (NDI) has become a standard instrument for measuring self-rated disability due to Neck disability, and it is used by clinicians and researchers alike. Each of the ten items is scored on a scale of 0 to 5. Because the maximum possible score is 50, the obtained score can be multiplied by two to obtain a percentage score.

Also, Vernon and Mior (1991) propose scoring intervals for interpretation as "less than 5 specifies no disability, 5–14 mild disability, 15–24 moderate disability, 25–34 severe disability, and scores greater than 34 complete disability".

2.5 Validity and reliability

The content validity of the questionnaire was evaluated by experts' panel of five anonymous dentists and public health experts. Prior to the study, for the assessment of the reliability of the questionnaire, a pilot study was undertaken to evaluate the study tools' clarity and usefulness, as well as to estimate the time required for each tool. It was carried out on a random sample of 40 dentists working in private clinics who were excluded from the actual study. The questionnaire took between 10 and 20 minutes to complete. Some questions were removed because they were irrelevant to the themes; others were added or improved, and required adjustments and modifications were made before the final version was created. Cronbach's alpha value was 0.91 for Neck disability and disability index.

2.6 Ethical considerations

The study was conducted after institutional review board (IRB) approval obtained from An-Najah University (Appendix B). A consent form was provided for every participant prior to the study. Voluntary participation was explained to dentists. No names were mentioned or any personal information about the participants. All data was kept confidential and was used for study purposes only. No harm or consequences due to participation refusal, such as care quality or privileges. A clear explanation was given to each participant about the study objectives and tool, and enough time was given for questions.

2.7 Data collection

After obtaining approval from the An-Najah University, the researcher contacted the Palestinian Dentists Association to present the purpose of the study and took the list of dentists. A list was obtained from the Palestinian dentists' association, consisting of the names and locations of all dentists in each of the three targeted districts. The dentists were then randomly selected from each district by selecting every fourth name on the list.

The researcher trained two research assistants to help in collecting data from the Hebron and Ramallah districts. The research assistants were dentists who had recently graduated. A training session for one hour was conducted on Zoom for the researcher assistants. They were instructed on how to respond to specific issues that may have arisen during data collection. It covered the research objectives, the research instrument, and data collection techniques. The training and instructions for the research assistants were meant to reduce their effects in the survey.

The researcher and the research assistants invited participants from every fourth on the list at each district until the required proportion number of the sample was achieved. The questionnaires were distributed face-to-face contact at Ramadan symposium, but those who did not attend were visited in the clinics. Participants assigned the informed consent, which was on the first page of the questionnaire. While the researchers were available in the setting to answer or explain participants' questions, if needed, the participants were encouraged to complete the questionnaires. English version of the instrument was used as all eligible participants are fluent in English.

2.8 Data analysis

Data was categorized, organized, tabulated, and statistically analyzed using the SPSS statistical computer package version 23. Data was analyzed as frequency, percentage, mean, and standard deviation. Also, an ANOVA test was used to assess the difference between the dependent variable (mean of Neck disability) and the independent variables (demographic and work characteristics). The threshold of significance was set at the $p<0.05$ level for the interpretation of results of tests of significance.

Chapter Three

Results

This chapter deals with the data collected for analysis. The statistical method allowed the investigator to deduce, analyze, coordinate, measure, evaluate, and convey the numerical information. The aim of data analysis is to provide answers to questions about the study. The data analysis strategy comes directly from the question, the design of the data collection process, and the level of measurement of the data. This chapter edits, tabulates, analyzes, and interprets the data collected.

3.1 Response rate

Three hundred and forty out of 350 questionnaires (97.1% response rate) were completed and returned by the dentists.

From an organizational point of view, the response rate obtained for this research was very good; as such, the findings should include more reflective details about the dentists' population.

3. 2 Baseline characteristics

Three hundred and forty dentists with a mean age of 29.6±6.1 years participated in the study and 252 (74.1%) of them were 30 years old and less. More than half of the dentists 197 (57.9%) were male and. 196 (57.6%) were married. Most of the participants 322 (94.7%) were general dentists. The majority of dentists surveyed 246 (72.4%) had 1-5 years' experience, as seen in (Table 3.1).

Table 3.1

Distribution of the demographic characteristics of dentists (N=340)

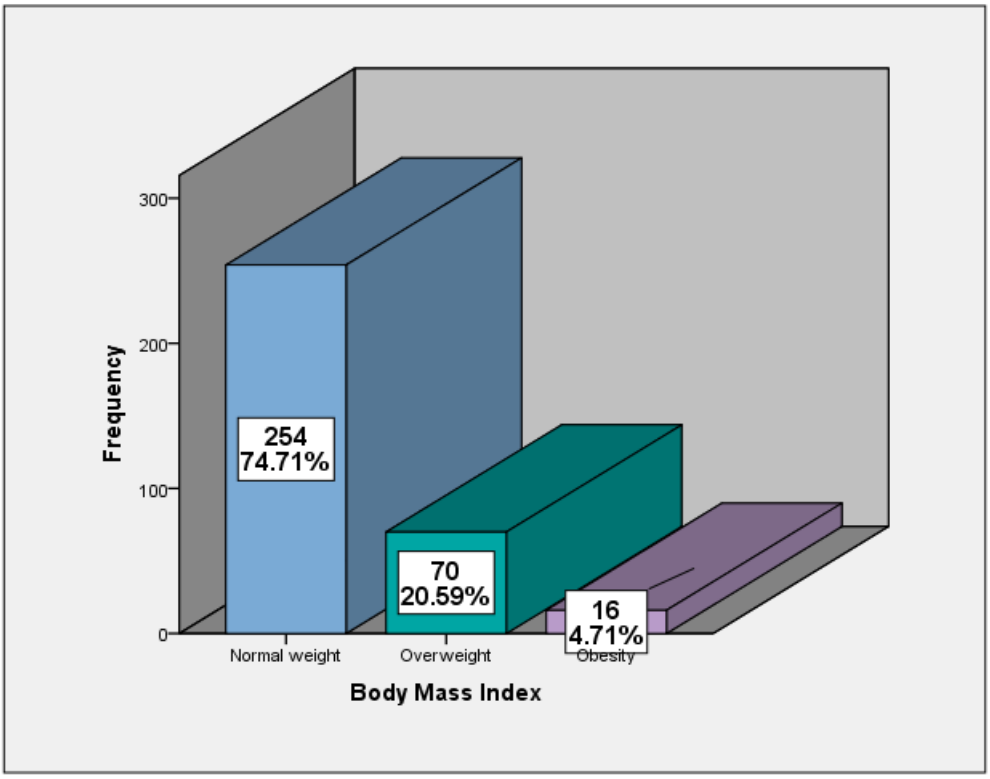
Characteristics		M (SD)	N (%)
Age		29.6(6.1)	
	"30 years old and less"		252(74.1
	"More than 30 years"		88(25.9
Gender	Male		197(57.9
	Female		143(42.1
Marital status	Married		196(57.6
	Single		144(42.4
Specialty	General dentist		322(94.7
	Specialist		18(5.3
Experience	"1-5 years"		246(72.4
	"6- 10 years"		60(17.6
	"More than 10 years"		34(10.0

Note: M mean, SD standard deviation, n frequency

Also, the analysis revealed that 254 (74.7%) of the dentists are within normal weight, as seen in (Figure 3.1).

Figure 3.1

Distribution of Body Mass Index among dentists



The findings revealed that 239 (70.3%) of the dentists worked 6 hours/day and 174 (51.2%) of them dealt with fewer than 8 patients per day. Two hundred and eight of the dentists (61.2%) reported that they did not have sufficient rest breaks between patients. Most of the dentists 280 (82.4%) reported that they bend or twist their head and back in an awkward way. The majority of the dentists 240 (70.6%) work in a chair with functional light. Also, 238 (70.0%) spent 20–40 minutes in the same position as each patient. as seen in (Table 3.2).

Table 3.2

Distribution of the working conditions of dentists (N=340)

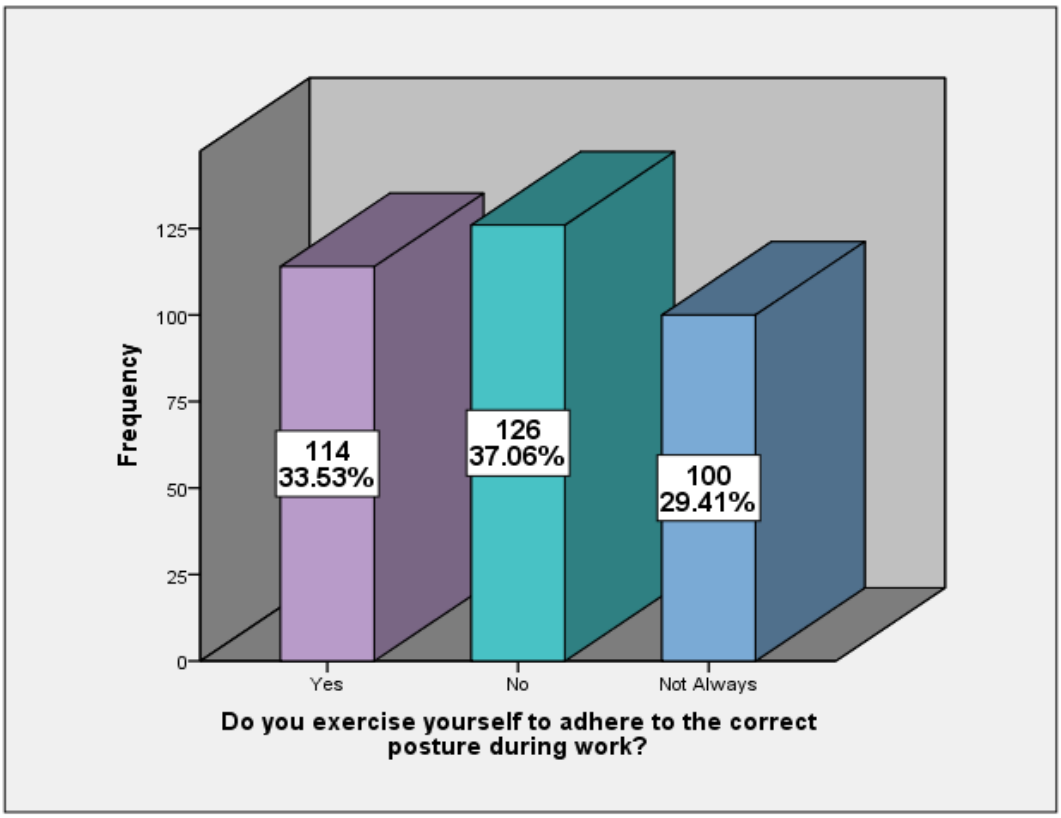
Characteristics		M (SD)	n (%)
Work hours/ day	"6 hours day		239(70.3)
	More than 6 hours/ day"		101(29.7)
Number of patients per day	"Less than 8 patients"		174(51.2)
	8-10 patients		136(40.0)
	More than 10 patients		30(8.8)
Do you have sufficient rest breaks between patients?	Yes		132(38.8)
	No		208(61.2)
"Bending or twisting your head and back in an awkward way?"	Yes		280(82.4
	No		60(17.6
"Do you work on a chair with functional light?"	Yes		240(70.6
	No		100(29.4
How much time do you need to spend at the same position for each patient?	Less than 20 minutes		90(26.5
	20 - 40 minutes		238(70.0
	More than 40 minutes		12(3.5

Note: M mean, SD standard deviation, n frequency

Only 114 (23.5%) of the dentists did exercise by themselves to adhere to the correct posture during work, 100 (29.4%) rarely exercised or did so only occasionally, while 126 (37.1%) reported that they did not do any kind of regular exercise, as seen in (Figure 3-2).

Figure 3.2

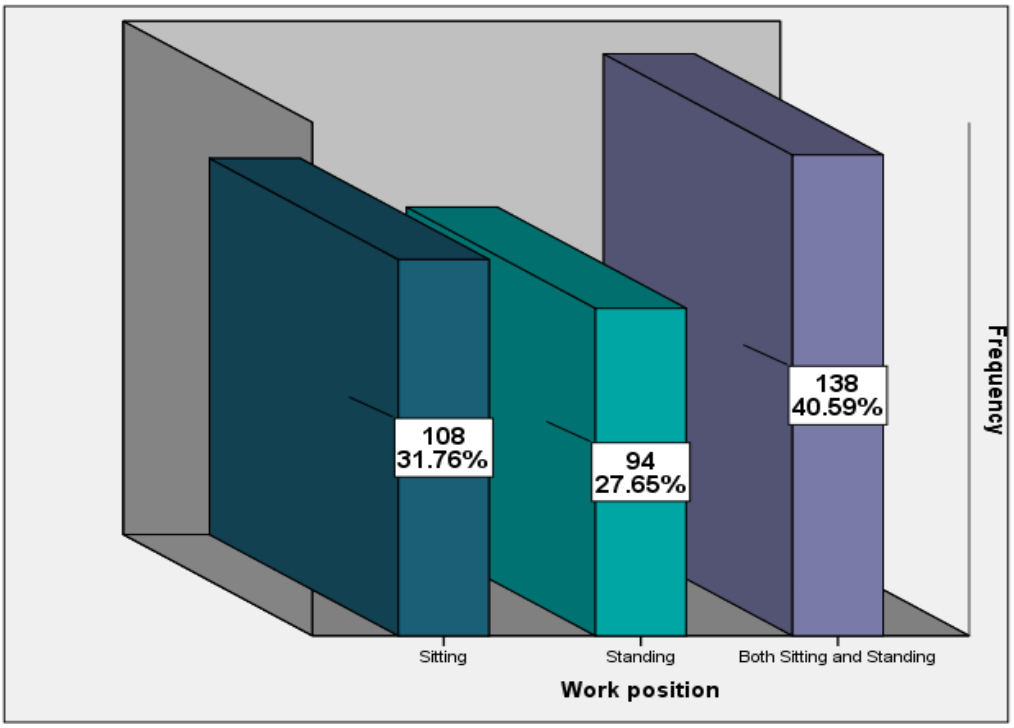
Distribution of the dentists regarding doing exercise during work



Also, the analysis revealed that 138 (40.6%) of the dentists reported that they work in both sitting and standing positions, as seen in (Figure 3.3).

Figure 3.3

Distribution of work position of the dentists



More than half of the dentists 192 (56.5%) played sport, 76 (22.4%) rarely played sport or did so only occasionally, while 72 (21.2%) reported that they did not play sport. Three hundred and twelve (91.0%) reported that they didn't have chronic diseases, as seen in Table 3.3.

Table 3.3

The health history and behaviors of dentists (N=340)

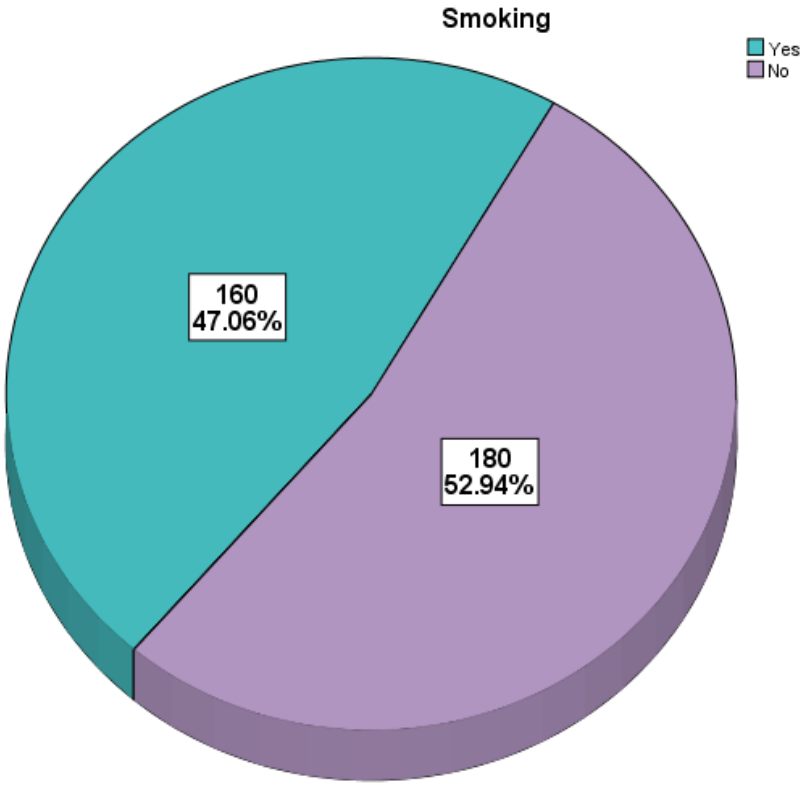
Health history and behaviors		n (%)
Do you play sport?	No	72(21.2)
	Yes	192(56.5)
	Rarely or occasionally	76(22.4)
Chronic disease	Diabetes	4(1.2)
	Diabetes and hypertension	12(3.5)
	Other chronic disease	12(3.5)
	No diseases	312(91.8)

Note: n frequency

Also, the analysis revealed that Less than half 160 (47.1%) of respondents are smokers, as seen in (Figure 3.4).

Figure 3.4

Distribution of the smoking among dentists



3.3 Prevalence of Neck disability and disability

The results revealed that the prevalence of Neck disability and disability index was high (75.3%) among dentists and 70 (20.6%) who had severe Neck disability and disability, as seen in (Table 3.4).

Table 3.4

The prevalence of Neck disability and disability of dentists (N=340)

Neck disability and disability	Total	Male	Female
	n%	n%	n%
No disability	84(24.7)	38(19.3)	46(32.2)
Mild	108(31.8)	90(45.7)	18(12.6)
Moderate	72(21.2)	24(12.2)	48(33.6)
Severe	70(20.6)	41(20.8)	29(20.3)
Complete	6(1.8)	4(2.0)	2(1.4)
Total	256(75.3)		

Note: n frequency

3.4 Association between Neck disability and demographic characteristics

The findings revealed that there was a statistically significant difference between age groups and Neck disability mean as demonstrated by the independent t test (t (254) = 6.979, p =.001). This highlights that the more than 30-year group has more mean Neck disability (46.4 ±19.6) than the 30-year group (30.6±15.9). Also, the findings revealed that there was a statistically significant difference between gender groups and Neck disability and disability mean as demonstrated by the independent t test (t (254) = 3.5, p = .001). This highlights that the female group has more mean Neck disability (41.0±16.3)) than the male group (33.0±19.6).

According to experience of dentists, the findings revealed that there was a statistically significant difference between experience groups and Neck disability and disability as demonstrated by ANOVA test (F (2, 253) = 270.2, p = .001). Scheffe post hoc test showed that the 6-10 years and more than 10 years groups were able to make Neck disability statistically significantly further than 1-5 years group (p = .001).

Regarding BMI level and Neck disability and disability, the analysis revealed that there was a statistically significant difference between groups as demonstrated by the ANOVA test (F (2, 253) = 18.44, p = .001). Scheffe post hoc test showed that the Overweight and obesity were able to make Neck disability statistically significantly further than normal weight (p = .001), as presented in (Table 3.5).

Table 3.5

The difference between the demographic characteristics and Neck disability and disability (N=256)

Demographic characteristics		N	M (SD)	Statistical test	P- value
Age	"30 years old and less"	168	30.6(15.9)	t=6.97	.001*
	"More than 30 years"	88	46.4(19.6)		
Gender	Male	159	33.0(19.6)	t = -3.512	.001*
	Female	97	41.0(16.3)		
Experience	"1-5 years"	162	24.2(12.2)	*F*=270.239	.001*
	"6- 10 years"	60	56.4(4.6)		
	"More than 10 years"	34	56.2(10.4)		
BMI level	Normal weight	184	31.9(17.9)	*F*=18.443	.001*
	Overweight	58	45.4(18.4)		
	Obesity	14	51.3(6.4)		

* Significant at the 0.05 level.

3.5 Association between Neck disability and disability and work conditions

According to position, the analysis revealed that there was a statistically significant difference between groups as demonstrated by the ANOVA test (F (2, 253) = 9.038, p = .001). Scheffe post hoc test showed that the standing position and alternative sitting and standing positions were able to make Neck disability statistically significantly further than the sitting position (p = 0.001 and 0.049) respectively.

Also, an independent t test also revealed a statistically significant difference between work hours groups and Neck disability and disability mean (t (254) = 3.3, p =.001). This highlights that the working more than 6 hours/day group has a greater mean Neck disability (42.2±16.7) than the working 6 hours /day group (33.9±19.0).

According to exercise during work, the analysis revealed that there was a statistically significant difference between groups as demonstrated by the ANOVA test (F (2, 253) = 33.9, p = .001). Scheffe post hoc test showed that not always doing exercise was able to make Neck disability statistically significantly further than doing or not doing exercise (p > 0.001).

Regarding the number of patients treated daily and Neck disability and disability, the analysis revealed that there was a statistically significant difference between groups as demonstrated by the ANOVA test ($F(2, 253) = 10.835$, $p < 0.001$). Scheffe post hoc test showed that the more than 8 patients treated daily able to make Neck disability statistically significantly further than less than 8 patients ($p < .001$), as presented in (Table 3.6).

Table 3.6

The difference between work condition and Neck disability (N=256)

Work condition		n	M (SD)	Statistical test	P- value
Position	Sitting	60	28.6(15.1)	F= 9.038	.001*
	Standing	82	41.8(19.0)		
	Both Sitting and Standing	114	35.8(19.1)		
Work hours	"6 hours /day"	191	33.9(19.0)	t=3.3	.001*
	"More than 6 hours/day "	65	42.2(16.7)		
Exercise during work	Yes	54	26.0(15.7)	F= 33.9	.001*
	No	126	32.7(18.0)		
	Not Always	76	48.7(15.2)		
Number of patients treated daily	less than 8 patients	114	30.9(18.2)	f= 0.835	.001*
	8-10 patients	124	41.5(17.6)		
	More than 10 patients	18	30.7(21.3)		

* Significant at the 0.05 level.

3.7 Predictors of neck disability

A multiple regression analysis revealed that the positive related predictors of the neck disability among dentists were more than 10 years' experience, who need more than 40 min to spend at the same position for each patient, who don't exercise himself to adhere to the correct posture during work, other diseases, and age. The negative related predictors of the neck disability among dentists were specialist dentists, experience 1-5 years, who don't have sufficient rest breaks between patients, Bending or twisting head and back in an awkward way, who don't work on a chair with functional light, who work on sitting or standing position, chronic diseases as diabetes, BMI, as seen in (Table 3.7).

Table 3.7

Predictors for neck pain disability (N=256)

Variable		B	Std. Error	t	p. value
Gender	Male	-1.197-	1.061	-1.128-	.260
	Female	0a	.	.	.
Specialty	specialists	-7.347-	2.104	-3.491-	.001*
	General dentist	0a	.	.	.
Experience	1-5 years	-34.006-	3.874	-8.778-	.000*
	6-10 years	0a	.	.	.
	More than 10 years	8.128	3.202	2.538	.012*
Working hours?	6 hours	0a			
	More than 6 hours	-3.173-	1.614	-1.965-	.050
How many patients are checked daily?	Less than 8 patients	.737	1.635	.451	.653
	8-10 patients	0a	.	.	.
	More than 10 patients	1.496	2.115	.707	.480
Do you have sufficient rest breaks between patients?	No	-8.525-	1.273	-6.695-	.000*
	Yes	0a	.	.	.
Bending or twisting your head and back in an awkward way?	Yes	-4.099-	1.467	-2.793-	.006*
	No	0a	.	.	.
Do you work on a chair with functional light?	No	-14.747-	1.467	-10.052-	.000*
	Yes	0a	.	.	.
position work	sitting	-5.386-	1.535	-3.508-	.001*
	standing	-15.030-	1.774	-8.472-	.000*
	Both	0a	.	.	.
How much time do you need to spend at the same position for each patient	Less than 20 min	1.691	1.587	1.065	.288
	20-40 min	0a	.	.	.
	More than 40 min	37.705	3.428	10.998	.000*
Do you exercise yourself to adhere to the correct posture during work	Yes	1.705	1.788	.954	.341
	No	18.717	1.439	13.003	.000*
	Rarely	0a	.	.	.
Have you ever smoked	No	-4.264-	1.277	-3.339-	.001*
	Yes	0a	.	.	.
	Negative	0a			
Chronic disease	Diabetes	-10.209-	4.240	-2.408-	.017*
	Hyper tension	-.932-	3.066	-.304-	.761
	Other	18.560	2.688	6.905	.000*
BMI		-.623-	.228	-2.731-	.007*
age		.897	.182	4.918	.000*

* Significant at the 0.05 level.

Chapter Four

Discussion

Introduction

In this chapter, the discussion, conclusions, and recommendations were explained. The conclusion was formulated according to the purpose of the study. The purpose of this study was to assess the prevalence and risk factors of Neck disability among dentists in Palestine.

4.1 Discussion

To the best of our knowledge, this is the first study on Palestinian dental professionals. Several studies published in the last decades on WRMSDs in the dental profession demonstrate that this is a major problem that has yet to be solved, with few solutions proposed to prevent it (Bozkurt et al., 2016; SperGarbin et al., 2017; Ohlendorf et al., 2020). Neck disability is very frequent in the general people and particularly among dentist's population (Shetty et al., 2015).

4.2.1 Prevalence of Neck disability

In the current study, the reported total prevalence of Neck disability and disability was high (75.3%). The prevalence of Neck disability among respondents is much greater than reported in Al Hadid study (2019) which indicated that 19.8% of the dentists in Jordan have Neck disability. Another study conducted by Abi Aad (2017) reported that 51.5% of Lebanese dentists have Neck disability. In addition, the present study showed that the prevalence of Neck disability was much higher than that among Saudi dentists who reported Neck disability prevalence of 34.3% (Al-Mohrej et al., 2016). Furthermore, 58.5% of dentists in Western countries (Sweden, Finland, Croatia, Spain, USA, Australia and New Zealand) by Lietz et al. (2018) and the 50 percent in New Zealand by Samotoi et al. (2008). This may be attributed to working situations of dental professionals and working safety in Palestine vary substantially from those countries.

However, this high prevalence value is in harmony with the results of Kumar et al (2013), who investigated MSDs among Indian dentists. The study found that the most commonly affected areas were the neck (75.7 percent), wrist/hand (73.1 percent), lower back (72.0 percent), shoulder (69.4 percent), hip (29.9 percent), upper back (18.7 percent), ankle (12.3 percent), and elbow (7.5 percent).

These findings are consistent with the circumstance that dental professionals primarily work in the upper body parts. The cervical spine is the mainly vulnerable part to developing WMSD, owing primarily to dental operators' working with the head tilted forward for more than 15–20 minutes, causing an overload on the neck and cervical spine joints' muscles. The posterior neck muscles (neck extensors) run tougher to support the neck versus gravity in this position, causing muscle tightening and Neck disability (Ohlendorf et al., 2020; Sustová et al., 2015).

4.2.2 Risk factors of Neck disability

Neck disability and disability may develop due to multiple risk factors. The association between age and Neck disability was noticed to be significant in the current study. Age is a contributing factor to the high frequency of MSD pain among dentists. Reviews have revealed that MSD symptoms intensify with age as older dentists have employed more time with patients and ultimately experience problematical pain. (Al-Mohrej et al., 2016). A routine stretching exercise program may reduce neck and shoulder pain, raise neck function, and enhance quality of life (Amoudi & Ayed, 2021; Tunwattanapong, Kongkasuwan & Kuptniratsaikul, 2016).

Gender was a significant variable in the present study of Neck disability among dentists. The mean of Neck disability and disability among females is higher (45.4±16.6) than in males (37.9±20.4). These data are in harmony with a previous study of Saudi dentists that stated that female dentists experienced more Neck disability than male dentists (AlMohrej et al., 2016). Similarly, a study by Hodacova et al. (2015) realized that female dentists experienced severer Neck disability than their male colleagues. Also, a study of Pakistani dentists indicated that female dentists showed a high frequency of Neck disability (Ijaz et al., 2016). A study accomplished by Muralidharan et al. (2013) revealed almost the same findings. This can be attributed to the women's muscular mass and strength, as well as their different physical constitutions. In addition, hormonal

changes, a higher incidence of osteoporosis, and additional physical stress (to take care of families and children) further favor the onset of Neck disability and other WMSD. However, South African male dentists stated a higher frequency of MSP in the neck, shoulder, and lower back (79.6%, 73.3%, and 70.1%) respectively than females (74.8%, 70.7%, and 69.1%) respectively (Smith, Sumar, & Dixon, 2014).

In terms of years of work, those who have worked for more than 10 years have a higher mean level of Neck disability than those who have worked for less. The pain arises as a result of repeated micro trauma, which has a cumulative impact. These findings are consistent with a previous study of Indian dentists, which found that the highest frequency of neck discomfort was observed when dentistry was practiced for more than 10 years (Shinde et al., 2015). According to similar findings among Saudi dentists, MSDs increase with years of practice (Al-Mohrej et al., 2016). This is most likely due to the dentist's ability to do all dental procedures during the most rigorous working portion of his or her profession. Indeed, at the start of a career, working activity may alternate with a period of learning or study, but towards the end of a career, the professional focuses on harder tasks with pay based on hours worked. However, other studies showed that MSD pain in dentists was negatively correlated with years of work (Finsen, Christensen, & Bakke, 1998; Leggat & Smith, 2006). This may be attributed to the fact that dentists with a lot of experience can learn to adapt their work posture and avoid MSDs, or that they can employ new graduated dentists in their centers and their jobs become supervisory, or that dentists with MSD problems might leave dentistry as a profession.

Surprisingly, the number of working hours per day was shown to be significantly related to the development of Neck disability and disability in the studied dentists ($p = 0.001$). Increased working hours lead to an increase in the occurrence of Neck disability. Previous study has revealed similar findings. Dentists who work long hours, especially without breaks, are more likely to develop Neck disability (Fals- Martnez et al., 2012; Peji et al., 2017). In addition, they have less time to devote to their bodies. According to similar studies by Indian dentists, the highest prevalence of Neck disability was identified while working more than 50 hours per week (more than 8 hours per day in a 6-day week) (Shinde et al., 2015).

Another feature of this study was the position of dentists in daily dental routine. The study confirmed that standing work positions are significantly associated with Neck disability. The positioning of dental instruments and equipment is an important factor in dental practitioners' musculoskeletal health.

Dentists working in a neutral sitting posture had improved health than those working in a standing position. In a neutral sitting position, the forearm should be saved parallel to the floor through work, and the hip and knee joints must be bent at an angle of at least 90 degrees (Bhandari et al., 2015). These findings are supported with the findings of Trakiniene et al. (2022), who emphasized the importance of maintaining a neutral sitting position in order to avoid Neck disability in dentists. Also, these results are proved by Kierklo et al. (2011), who stated that working in standing position is a factor for knees and feet pain. However, these findings are inconsistent with the findings obtained by Šćepanović et al. (2019) who indicated no difference in the frequency of MSDs working mainly in a sitting position, and those adjusting sitting and standing positions among dentists.

The association between BMI and Neck disability was noticed to be significant. Overweight and obesity were able to make Neck disability disability statistically significantly greater than normal weight. These data are in line with a previous study that revealed that overweight dentists seem to be more susceptible to neck and back pain than normal participants (Wali et al., 2018). However, this contradicts some studies that found no association between BMI and MSDs (Bakhsh et al., 2021).

The connotation between exercise at work and Neck disability was found to be significant. Routine physical exercise was correlated with decreased Neck disability (Feng et al., 2014). Dentists who do not routinely do physical exercises have a significantly greater number of MS pain parts than those who routinely do physical exercises.

According to Droeze and Jonsson (2005), workers who were not fit and healthy were at risk of experiencing MSDs caused by decreased flow of oxygen and supplements to the muscles. Twenty minutes of aerobic exercise three to four times a week is endorsed for dentists (Valachi&Valachi, 2003). However, some studies concluded that the effect of

exercise on the incidence of MSP was not significant (Augustson & Morken, 1996; Pourabbas et al., 2004).

Furthermore, the number of patients treated per day increased to eight. This will contribute to the likelihood of developing Neck disability. These results were consistent with Lietz et al. (2018) and Pejčić et al. (2017).

4.3 Limitations of the study

1. The present study was a cross-sectional study with self-reported surveys, which may carry the possibility of over- or underestimation of participants' conditions.

2. Physical examinations and screenings are more credible, but they are also costlier and more time-consuming.

4.4 Recommendations

The current study revealed that there is a high prevalence of Neck disability among Palestinian dentists. Therefore, it is recommended that

1. To reduce the prevalence of MSDs among dentists, the implementation of occupational health protection measures and the formulation of ergonomic guidelines and recommendations should be encouraged.

2. Prospective studies on the long-term effects of physical and psychosocial risk factors on the development of Neck disability in dental practitioners should be conducted.

3. To prevent the serious health risks associated with this occupation, specific occupational health education programs, such as refined work organization, ergonomic workplace adaptation, and psychosocial coping skills, should be implemented.

4. A multidisciplinary approach should be used, with primary prevention, early intervention, and ongoing education about the potential effects of dentistry-related risk factors.

4.5 Conclusions

The current study has identified an alarmingly high prevalence of Neck disability and disability among dentists in Palestine. The functional disability was mild, with a considerable percentage suffering from severe disability. Pain and disability differ significantly with age, gender, years of work, the number of working hours per day, BMI, exercise at work, the number of patients treated daily, and working position.

List of Abbreviations

Abbreviation	Meaning
ANOVA	“Analysis of Variance”
BMI	“Body Mass Index”
IRB	“Institutional review board”
M	Mean
MoH	“Ministry of Health“
MSDs	Musculoskeletal Disorders
NDI	Neck disability and Disability Index
PDA	Palestinian Dental Association
SD	Standard deviation
VAS	visual analogue scale
USA	“United states of America”
WHO	“World Health Organization”
WRMSDs	“Work related musculoskeletal disorders”
BMI	Body mass index

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Appendices

Appendix A

Questionnaire

An- Najah
tional University
ty of Medicine & Health Sciences
Department of Nursing

بسم الله الرحمن الرحيم

جامعة النجاح الوطنية
كلية الطب وعلوم الصحة
دائرة التمريض

MASTER Public Health

Informed consent

Prevalence and Risk factors of Neck pain among Dentists in Palestine

ملحق الاستبيان

كلية الطب وعلوم الصحة – الدراسات العليا

أنا الباحثة طبيبة الاسنان منوى احمد عايد أقوم بعمل هذه الدراسة التابعة لكلية الطب و علوم الصحة – الدراسات العليا والتي تقوم على دراسة انتشار وعوامل خطر الاصابة بالام الرقبة بين اطباء الاسنان الفلسطينيين مع العلم إن هذه المعلومات ستستخدم لأغراض البحث العلمي و ستعامل بسرية تامة، و يعتبر التوقيع على البحث بمثابة موافقة للمشاركة في الدراسة مع العلم انه بالإمكان الانسحاب في أي وقت تشاء دون إبداء الأسباب ولا يترتب على ذلك أي تغير في الرعاية و العلاج المقدم.

توقيع المشترك بالبحث :----------.

الباحث: الدكتورة منوي عايد

المشرف: د. نهال الناطور
المشرف المساعد: د. مريم الطل

Part one: "Demographic characteristics of the dentists"

- **Age----------**
- **Gender** **"**Male" "Female"
- **Marital status:** **"**Single" "Married"
- **Residence area** Ramallah Nablus Hebron
- **Weight_____**
- **Height_____**
- **Specialty** General Dentist Specialist
- **Experience** **"**1-5 years" "6-10 years" "More than 10 years"

Part two: Workingconditions of the dentists

- **Working hours/ Day** 6 hours More than 6 hours
- **Number of patients treating/ day** Less than 8 patient 8-10 patients

  More than 10 patients
- **Working position** Sitting Standing Both Sitting and Standing
- **Sufficient rest breaks between patients** Yes No
- **"Bending or twisting head and back in an awkward way"** Yes No
- **"Work on a chair with functional light"** Yes No
- **Time need to spend at the same position for each patient**

  Less than 20 minutes 20-40 minutes More than 40 minutes
- **Exercise to adhere to the correct posture during work**

  Yes No rarely or occasionally

Part three: Healthhistory and behaviors of dentists

- **Playing sport** Yes No rarely or occasionally
- **Smoking** Yes No
- **Chronic disease** Diabetes Diabetes and hypertension

  Other chronic disease No diseases

Part four: Neck pain and Disability Index

Section 1: Pain Intensity

- I have no pain at the moment
- The pain is very mild at the moment
- The pain is moderate at the moment
- The pain is fairly severe at the moment
- The pain is very severe at the moment
- The pain is the worst imaginable at the moment

Section 2: Personal Care (Washing, Dressing, etc.)

- I can look after myself normally without causing extra pain
- I can look after myself normally but it causes extra pain
- It is painful to look after myself and I am slow and careful
- I need some help but can manage most of my personal care
- I need help every day in most aspects of self- care
- I do not get dressed, I wash with difficulty and stay in bed

Section 3: Lifting

- I can lift heavy weights without extra pain
- I can lift heavy weights but it gives extra pain
- Pain prevents me lifting heavy weights off the floor, but I can manage if they are conveniently placed, for example on a table
- Pain prevents me from lifting heavy weights but I can manage light to medium weights if they are conveniently positioned
- I can only lift very light weights
- I cannot lift or carry anything

Section 4: Reading

- I can read as much as I want to with no pain in my neck
- I can read as much as I want to with slight pain in my neck
- I can read as much as I want with moderate pain in my neck
- I can't read as much as I want because of moderate pain in my neck
- I can hardly read at all because of severe pain in my neck
- I cannot read at all

Section 5: Headaches

- I have no headaches at all
- I have slight headaches, which come infrequently
- I have moderate headaches, which come infrequently
- I have moderate headaches, which come frequently
- I have severe headaches, which come frequently
- I have headaches almost all the time

Section 6: Concentration

- I can concentrate fully when I want to with no difficulty
- I can concentrate fully when I want to with slight difficulty
- I have a fair degree of difficulty in concentrating when I want to
- I have a lot of difficulty in concentrating when I want to
- I have a great deal of difficulty in concentrating when I want to
- I cannot concentrate at all

Section 7: Work

- I can do as much work as I want to
- I can only do my usual work, but no more
- I can do most of my usual work, but no more
- I cannot do my usual work
- I can hardly do any work at all
- I can't do any work at all

Section 8: Driving

- I can drive my car without any neck pain
- I can drive my car as long as I want with slight pain in my neck
- I can drive my car as long as I want with moderate pain in my neck
- I can't drive my car as long as I want because of moderate pain in my neck
- I can hardly drive at all because of severe pain in my neck
- I can't drive my car at all

Section 9: Sleeping

- I have no trouble sleeping
- My sleep is slightly disturbed (less than 1 hr sleepless)
- My sleep is mildly disturbed (1-2 hrs sleepless)
- My sleep is moderately disturbed (2-3 hrs sleepless)
- My sleep is greatly disturbed (3-5 hrs sleepless)
- My sleep is completely disturbed (5-7hrs sleepless)

Section 10: Recreation

- I am able to engage in all my recreation activities with no neck pain at all
- I am able to engage in all my recreation activities, with some pain in my neck
- I am able to engage in most, but not all of my usual recreation activities because of pain in my neck
- I am able to engage in a few of my usual recreation activities because of pain in my neck
- I can hardly do any recreation activities because of pain in my neck
- I can't do any recreation activities at all

Appendix B

IRB Approval Letter

An-Najah National University
Faculty of Medicine & Health Sciences
Institutional Review Board

Ref: Mas. March 2022/11

IRB Approval Letter

Title of Research:

Prevalence and Risk factors of Neck pain among Dentists in Nablus , in 2021.

Submitted by:
Marwa Ahmad [illegible]

Supervisor:
Nihal Natour

Approved:
3rd March, 2022

Your Study Title **"Prevalence and Risk factors of Neck pain among Dentists in Nablus , 2021,"** reviewed by An-Najah National University IRB committee and was approved on 3rd March 2022.

Hasan Fitian, MD
IRB Committee Chairman

IRB

Nablus - P.O Box 7 [illegible] | Tel [illegible] | Facsimile [illegible]
[illegible]

جـامعـــة النجاح الوطنية

كليـــة الدراســـات العليـــا

عوامل خطر آلام الرقبة بين أطباء الأسنان في فلسطين

إعداد

منوى أحمد جمعة عايد

إشراف

د. نهال ناطور

د. مريم الطل

قدمت هذه الرسالة استكمالا لمتطلبات الحصول على درجة الماجستير في الصحة العامة، من كلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس– فلسطين.

2022

عوامل خطر آلام الرقبة بين أطباء الأسنان في فلسطين

إعداد

منوى أحمد جمعة عايد

إشراف

د. نهال ناطور

د. مريم الطل

الملخص

المقدمة: آلام الرقبة والعجز، وهي واحدة من أكثر العلامات انتشارًا لمشاكل العضلات والعظام، وهي الحالة الثانية الأكثر شيوعًا المرتبطة باضطرابات العمود الفقري. يصيب الناس من جميع الأعمار بعد آلام الظهر. ترتبط المهن التي تنطوي على جوانب متكررة من الحركة، مثل أعباء العمل الجسدية المرتفعة مع الإجهاد النفسي الاجتماعي، على نطاق واسع بالاضطرابات العضلية الهيكلية التي تحدث نتيجة لمهام عمل محددة وأوضاع غير مريحة يمارسها المحترفون.

الهدف: تقييم مدى انتشار وعوامل الخطر لألم الرقبة والعجز بين أطباء الأسنان في الضفة الغربية، فلسطين. كما سعت الدراسة إلى تقييم العلاقة بين العوامل الديموغرافية وحالة العمل وإعاقة الرقبة لدى أطباء الأسنان في الضفة الغربية.

الطريقة: أجرى الباحث دراسة مقطعية ج في الفترة ما بين 1 تشرين الأول (أكتوبر) 2021 و 1 أيار (مايو) 2022. تم إجراء استبيان مؤلف من 10 عناصر لمؤشر إعاقة العنق على 350 طبيب أسنان تم اختيارهم عشوائياً من محافظات رام الله والخليل ونابلس. تم إكمال الاستبيان وجهًا لوجه، وأكمله ما مجموعه 340 طبيب أسنان (97.1٪).

النتائج: كان متوسط عمر المشاركين 29.6 ± 6.1 سنة. كان مؤشر انتشار الإعاقة في العنق مرتفعاً (75.3٪) بين أطباء الأسنان. أفاد سبعون (20.6٪) من أطباء الأسنان بأنهم يعانون من إعاقة شديدة في الرقبة. تضمنت العوامل التي ارتبطت بشكل كبير بإعاقة الرقبة العمر والجنس وسنوات العمل وعدد ساعات العمل في اليوم ومؤشر كتلة الجسم وممارسة الرياضة في العمل وعدد المرضى الذين عولجوا يوميًا ووضعية العمل ($P < 0.05$).

الخلاصة: هناك انتشار كبير لإعاقة العنق بين أطباء الأسنان في فلسطين. كانت الإعاقة الوظيفية خفيفة، مع وجود نسبة كبيرة من أطباء الأسنان يعانون من إعاقة شديدة. توصي الدراسة بتنفيذ / تنظيم برامج تعليم الصحة المهنية المحددة التي تغطي تحسين تنظيم العمل، ومهارات التأقلم النفسي الاجتماعي، والتكيف المريح في مكان العمل، من أجل منع المخاطر الشديدة على الصحة في هذه المهنة.

الكلمات المفتاحية: الانتشار، عوامل الخطورة، آلام الرقبة، إعاقة، أطباء الأسنان، فلسطين.