

Distribution of Musculoskeletal Disorders among Dentists in Bulgaria

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Abstract: *The aim of the current article is to establish the distribution of musculoskeletal disorders among the dentists in Bulgaria. Our goal was to determine the frequency, type, localization and strength of pain, as a main symptom of the suffered musculoskeletal disorders. The published results are based on a questionnaire survey, among 700 dentists in Bulgaria. Musculoskeletal disorders are widely spread among dentists (81.87%). Their main clinical symptom is pain, most often felt in the region of the neck and the shoulders. Almost equally pain has been felt in the region of the upper (23.66%), lower back (22.22%), and the upper extremities (21.19%). The main estimated type of pain is "chronic pain", and the main intensity is "half strenghted(moderate) pain". Most of the respondents of the survey have stated that the pain exists since years.*

Keywords: musculoskeletal disorders, severity of pain, type of pain, localization of pain, duration of pain.

1. Introduction

Dentist often complain of musculoskeletal pain in the course of their professional activity. Ignoring such regularly occurring pain and discomfort, this accumulation of physiological disturbances may result in trauma or even a dysfunction ending their professional career. Musculoskeletal disorders in dental professionals are subject of numerous studies focusing on the pain suffered by the practitioners. In a study dating back to 1946 F.E. Biller (6) found out that 65% of the dentists suffered back pain. Even after the evolution in dental clinical practice transitioning from the more-obsolete „standing posture" to the more modern „sitting posture" at work and advanced ergonomic equipment surveys illustrate that neck, back, shoulder or upper extremity pain are present in up to 81% of the dentists (5, 7, 9, 18).

I.M. Abiodun-Solanke et al. (1) surveyed 147 dentists. The results indicated that 88.1% reported back pain and 81.9% had neck pain.

A survey held by E.C. Alexopoulos, I.C. Stathi and F. Charizani (3) among 430 dentists (respondents - 88%) in Thessalonica revealed that 62% of them complained of musculoskeletal type of pain, 30% of all surveyed classifying the pain as chronic. The specific results reported 26% having neck pain and 20% - shoulder pain, while 46% of the respondents suffered from lower back pain and 26% were with carpal tunnel syndrome.

A study of T. Augustson and T. Morken (5) among 329 dentists found out presence of MSD pain in 81%. The results revealed specific manifestations of shoulder pain (45%), neck pain (47%), pain in the lower back (49%), arm and wrist (21%), upper back (20%), thighs (18%), knees (14%), elbows (12%) and ankles (10%).

A study conducted by B.P. Shrestha et al. in 2006 among 68 dentists in Nepal (17) established neck pain in 58.8% and shoulder pain in 47% of the subjects. Significant share

(79.4%) had back pain at least once during the past year. Of them 55.9% were with mild pain, 19.4% - moderate and only 3% - strong pain. 58.8% had neck pain at least once during the past year. Of them 42.6% listed the pain as mild, 11.8% - moderate, and 5.9% - strong. 47.1% had shoulder pain at least once during the past year, of them 39.7% reported mild pain, 5.9% - moderate, 6% - strong. 69% of all women and 51% of all men suffered neck pain.

A. Puriene et al. (16) held a survey among the dentists of Lithuania in 2006. 91% of the respondents had back pain, while 88.7% were with headache. Almost 83.1% reported upper extremities problems, such as pain and carpal tunnel syndrome. Yet another similar study, held in New South Wales by E.D. Marshall et al. (14) focused on the distribution of musculoskeletal disorders in dentists and studied the interrelationships between these symptoms and practicing dental profession among 355 subjects surveyed. The respondents (82% respondent rate) advised that they experienced at least one musculoskeletal symptom in the last month, 64% reporting pain, while 58% - having headache.

A study conducted during the first half of 2002 in 4 Polish Dental Association sections by J. Szymanska among 265 dentists of different specialties reported presence of pain in thoraco-lumbar back section in 60.1% of the subjects studied. Neck pain was reported by some 56.3% of the respondents (19).

Another study by A. Kobus, M. Jaworska and B. Botulinski among 220 dentists in Poland (11) illustrated that 92% of the subjects surveyed had MSD, with neck pain (47%); lower back pain - 35%, as well as problems with: upper extremities and fingers – over 29%; 23% - back, 20% - mid spinal cord section and 20% - shoulder pain. 18.3% complained of wrist pain and 15-16% - of elbow and foot pain. The respondents associated all these pain types with the nature of their profession.

Considerably higher occupational MSD levels were reported by a study among dentists from the Australian Dental

Association, held by P.A Leggat and D.R Smith (12) among 285 dentists. 57.5% of the subjects reported cervix pain; 53.7% - lower back pain; 50.3% - shoulder pain; and 24.6% - neck pain.

A study, conducted in Hong Kong among 500 dentists (13) by T.K Lun Li et al. in 2002 established that the most common health problem for the dentists is MSD (43%), followed by allergic dermatitis of the hands (24%) and instrument caused injuries (17%). The prevalent pain was mostly in the lower back and the cervix.

R.S Acharya et al. studied 150 dentists from Nepal (2). The distribution of the musculoskeletal disorders for the last 12 months was as followed: neck pain – 52.4%; lower back pain -52.4%; shoulder pain- 49.5%; upper back – 41.7%; wrist/hand – 36.9%.

A phone interview held by E. Milerad and L. Ekenvall (15) showed that 44% of the dentists and 29% of the pharmacists reported neck pain; while 51% of the dentists and 23% of the pharmacists experienced shoulder pain. Musculoskeletal symptoms of the forearm were present predominantly with the dentists - 12% against just 1% for the pharmacists.

In Thailand S. Chowanadisai, B. Kukiattrakoon et al. (7) surveyed 220 Thailand dentists in 1997. 78% of the respondents reported musculoskeletal disorders, followed by percutaneous injuries - 50%.

A. Al-Kholani et al. (4) studied 136 dentists in a public dental care clinic in Yemen and found out that back pain affected 80% of the subjects, followed by neck pain (58.8%) and shoulder pain (47%). There results are close to those most of the studies. Another study, conducted by P.Dajpratham (8) involving 164 dentists displayed extremely high MSD incidence – 96.3%. Most widely spread was shoulder pain (72.2%), next came neck pain (70.3%) and lower back pain (50.6%). Hayes et al. (10) found out that musculoskeletal disorder-related pain among dental professionals (dentists. Students and hygienists) varied between 64% and 93%. Most common proved to be neck pain (64,29%), followed by lower back pain (57,94%) and shoulder pain - 48,41% in dental students, while these figures were respectively 36,3% - 60,1% for back pain and 60%-69,5% for neck pain.

The aim of this study is to establish the distribution of musculoskeletal disorders among the dentists in Bulgaria.

The study objectives cover:

1. Determining the incidence of pain, as a major MSD symptom among the dentists.
2. Outlining the pain character, localization and intensity.

2. Material and Methods

The source information needed for the study objectives was gathered through surveys using written questionnaires distributed and filled out within the period October 2012 – April 2013. The questionnaire was designed by us specifically to serve the objectives of the study. The survey was conducted with the support of BDU and regional bodies in Sofia, Pleven, Shoumen, Varna, and Vratza. A total of 1300 questionnaires were prepared and disseminated, of which we got back 700 (return rate – 53.84%). They comprised of 27 close questions (fixed answers) on paper, each having a unique entry code.

The age groups covered by the study are almost equally presented, except for the 66+ age group: age group 25-35 – 163 participants (23,35%), 36-45 - 171 individuals (24,50%), the 46-55 age group is the most numerous - 196 individuals (28,08%), 56-65 age group - 139 (19.91%), and the least presented age group of 66+ - only 29 (4,15%) i.e. all age groups were included. The relative share of dentists having over 20-years length of service is distinctly high (54.33%). It suggests more representative measurement/reporting of the impact of dental-specific factors, causing MSD. The major share of dentists, participating in the study, is as follows: general practitioners (58.03%), followed by the group, practicing mostly conservative dental care (12.49%) and prosthetic dental medicine (10.29%). Comparatively lower is the share of those practicing specific narrow specialties such as: oral surgery (7.40%), pediatric dental medicine (6.47%), periodontology (3.12%) and the least share is that of orthodontology (2.20%).

3. Results

Pain incidence and character for the dentists in Bulgaria

Significant share of dentists – 569 (81.87%) reported musculoskeletal type of pain they associated with their professional activity. The share of dentists with no such complaints is tiny – 126 (18.13%). We entered a question on assessing the type of pain among the dentists with MSD in order to be able to characterize its nature. The study results demonstrate that the major pain type is chronic (85.84%) (Fig.1).

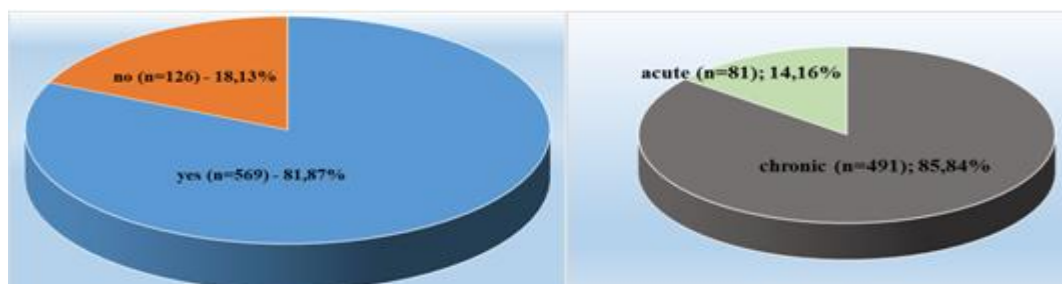


Figure 1: Chart presentation of MSD-related pain incidence and nature

Pain localization

The study subjects listed the zone/zones of musculoskeletal pain due to their professional activity. The results reveal that it is present mostly in the neck and shoulder area –320 (32.92%), and almost equally distributed in the remaining

zones – for 230 (23.66%) of the respondents the pain is localized in the upper back area; for 216 (22.22%) – in the lower back area, while upper extremities pain is listed by 206 (21.19%) (Fig.2).

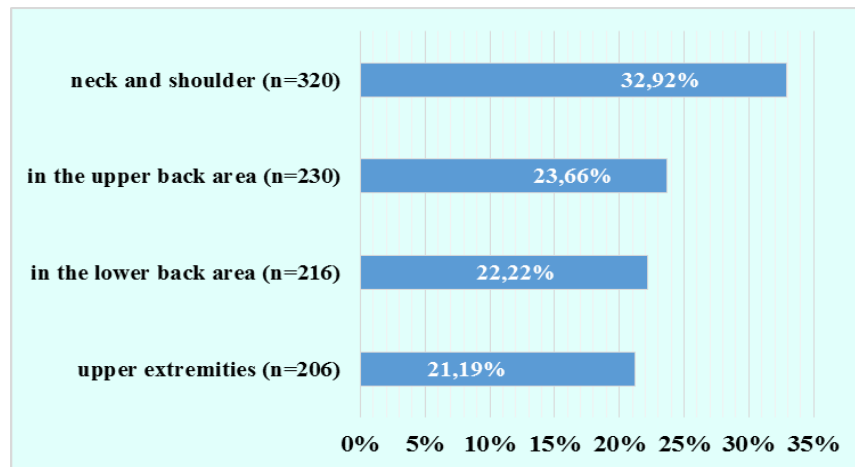


Figure 2: Pain Zones (N=566)

Pain Intensity

The respondents used their individual discretion in defining the pain intensity as mild, moderate, strong and severe/unbearable. Most of the respondents - 388 (64.88%)

have defined it as moderate, 132 (22.07%) – as mild. It is disturbing that not that small percent of the respondents define it as strong -73 (12.21%) and severe/unbearable 5 (0.84%) (Fig.3).

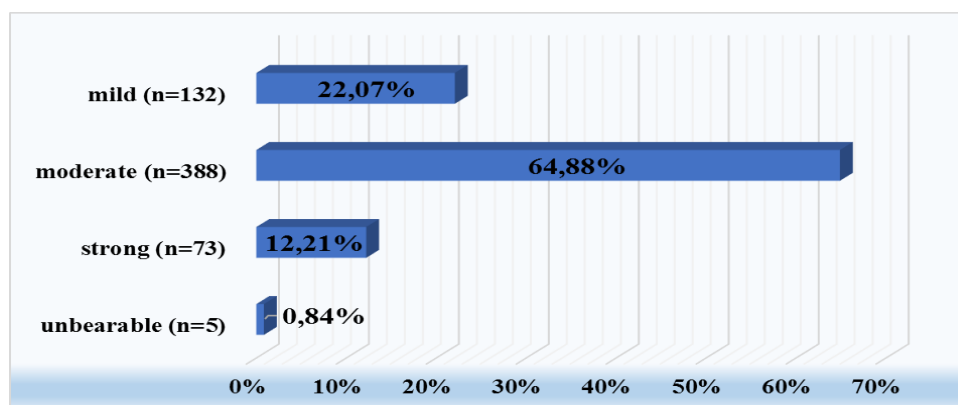


Figure 3: Musculoskeletal Pain Level (N=569)

Pain Duration

The survey participants determined pain duration in time as followed: experiencing pain for years - 381 respondents (67.55%), for months – 148 (26.24%), and for weeks – 35 (6.21%) (Fig.4). These results illustrate the severity of the problem.

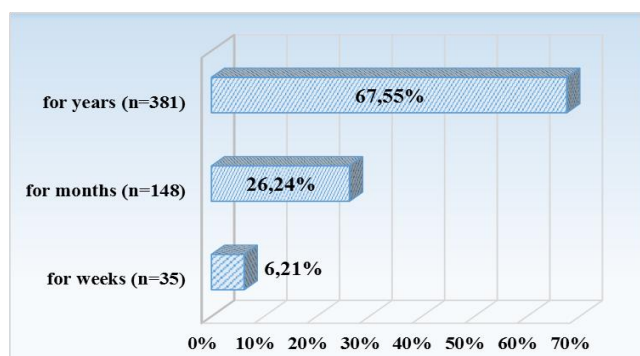


Figure 4: Period of pain manifestation in time (N=564)

4. Discussion

Based on published data we avail of, the distribution of musculoskeletal disorders among the dentists in Bulgaria falls within similar ranges. Our data display that 81.87% of our practitioners have MSD-related pain. This gives us reason to conclude that the occupational factors, conducive to the development of MSD are similar for all dentists, irrespective of their dental practice geographical region.

Our study has found out that the Bulgarian dentists suffer mostly of chronic pain (85.84%), predominantly defining its intensity as moderate (64.88%). Lower levels are reported in a Nepal study – 55.9% and a study conducted in Greece, where the pain in 30% of the dentists is of a chronic nature (3).

Besides pain character and intensity, we also focused on its localization. The main areas of pain manifestation among the Bulgarian dentists prove to be neck and shoulder

(32.92%), while comparatively lower, yet relatively equal are the shares of the other three area types listed, namely upper and lower back (23.66% and 22.22%) and upper extremities (21.19%). For this specific indicator our data partially overlap with those officially published.

The neck and shoulder pain type distribution is key both for dentists in Bulgaria and abroad, though our country level is comparatively lower – 32.92%. The levels indicated in officially published papers, that we have access to, are significantly higher. For example neck pain goes to 63% of the dentists in Nebraska, 65% in Denmark, 72% in Sweden, 81,9% in Nigeria, 58% - in Australia, 38% - in Israel, 58,8% - Nepal, 56,3% - Poland, 28% в – in Iran, 58,8% in Yemen, 54.4% in Saudi Arabia, and 26% in Greece.

For the remaining three pain zones the officially published data are also higher: for Saudi Arabia the study results report 73.5% back pain; in Canada this percentage is 57%, out of which 35.5% for lower back pain; in Yemen the lower back pain distribution is in the range of 80%; in Nepal lower back pain – 52.4%, while upper back pain – 41.7% and upper extremities – 36.9%; in Australia back pain is present in 53.7%; in India this level is 75,5%; Iran - 33%; Finland - 38%; Poland – 60.1% and 44% - in the upper extremities; for Greece – 46% lower back pain; Denmark – 50%.

5. Conclusions

- 1) The level of MSD-related pain among the dentists in Bulgaria is very high (81.87%), similar to the officially published data.
- 2) The majority of the respondents (67.55%) state that this MSD-provoked pain exists for years.
- 3) The largest is the share of neck and shoulder pain - 32.92%, while for the other three zones – upper and lower back and the upper extremities area, pain distribution is almost equal ranging from 21.19% to 23.66%.
- 4) The prevailing pain intensity specified by our dentists is of the “moderate” type – 64.88%. Much lower is the number of respondents, classifying it as “mild” (22.07%) and “strong” (12.21%).
- 5) The major pain type, reported by the dentists, has a “chronic nature” - 85,84%.

All the data in this introducing article on the severity of the problems, related to MSD among dentists and the conclusions made give us grounds for future research on both the relationship of MSD to the socio-demographic and occupational factors and pain management methods.

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