Frequency of Work Related Musculoskeletal Wrist Pain Among Health Care Professionals of Lahore Pakistan

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Abstract:
The wrist and hand work related musculoskeletal (MSK) problems are very high in individuals performing prolonged hand task and repeated movements. The profession required manual dealing with additionally repetitive movement and hard work are at high risk of developing work related MSK problems.

Objective:
To determine the frequency of work related musculoskeletal wrist pain among health care professionals.

Methods:
In this cross sectional study the sample size was 227 and data were collected from Children Hospital, Jinnah Hospital and Nawaz Sharif Social Security hospital (PESSI) of Lahore, Pakistan using convenient sampling. In this study a valid questionnaire Patient Rated wrist evaluation (PRWE) was used. The questionnaire comprised of three demographic questions and 15 other questions regarding pain and difficulty in doing functional activities ranging from 0 to 10.

Results:
In this study out of 227 individuals 175 participants reported wrist pain. According to profession the frequency of MSK wrist pain among health care professionals was 54 (30.9%) in doctors, 63 (36%) in dentists, 26 (14.9%) in physiotherapists and 32 (18.3%) in other professionals (nurses, speech therapists).

Conclusions:
This study reported high frequency of work related musculoskeletal wrist pain among health care professionals but the intensity of pain was mild to moderate.

Keywords:
Health care professionals (HCP), work related wrist pain (WRWP), working experience.

Introduction:
The term musculoskeletal problems incorporate an array of provocation and degenerative conditions which cause pain, discomfort and effect tendon, joints, ligament, supporting veins and numerous nerve fibers1. In numerous professions/occupations musculoskeletal side effects is a significant medical problem throughout the world2. Musculoskeletal disorders are the well-known reason for serious long-term pain and discomfort as well as it influence a huge number of individuals around the globe3. Cumulative traumas such as excessive force, repetitive movement and awkward or sustained posture leads to musculoskeletal symptoms4. Different physiological and ergonomic elements identified with the profession are responsible for higher rates of musculoskeletal torments among medical specialist. Work related factors incorporate movement, poor posture, delayed utilization of vibrating devices, lengthy work and number of patients per day5. The profession requiring manual dealing with additionally repetitive movement and hard work are at high risk of developing work related musculoskeletal problems. The most common cause of developing wrist pain among health care professionals is prolonged work and repetitive movements6. According to literature there are strong correlation between work place physical loading, biomechanical loading, internal tolerance, pain, impairment and disability. Overall, literature shows strong relation between pain, discomfort, impairment or disability and external loading. Before explaining the musculoskeletal wrist pains briefly describe the concept of chronic pain. Previous studies revealed that musculoskeletal pain is associated with many factors like pain is increased with age, females have high prevalence of pain, more common in lower class people and individual in psychological stress condition. A work related musculoskeletal wrist pain is define as the pain in wrist joint which is caused by repeated movement of wrist and prolonged external force on wrist7. Work related musculoskeletal problems in wrist and hand is caused when an individual or worker is exposed to physical risk factors for a long period of time. The upper limb function, physical activities and working ability is decreased by musculoskeletal problems of forearm, wrist and hand8,9. These problems also consist muscles and tendons of wrist and hand9. According to literature there are several factors which are responsible for increasing the risk of illness and medical leave among health care professionals10. A higher frequency or, on the other hand higher prevalence and incidence among workers which have more prominent introduction to physical risk factors in the work environment11. Conservative treatment of wrist and hand musculoskeletal symptoms include rest, lesser activity, correct wrist and hand posture, and decrease excessive force on hand. Medical treatment include medication such as NSAID’s and analgesics helps in controlling musculoskeletal pain but excessive use of these medicine can cause serious health problems including hypercalcemia, anemia, renal failure and gastrointestinal diseases12. Physiotherapy treatment is also used to relieve pain this treatment includes manual therapy (mobilization, manipulation and traction) acupuncture, exercise and physical modalities for example ultrasound therapy, cryotherapy, heat application13. Yesim Salik et al., conducted a research according to which the prevalence of work related musculoskeletal problems in hand and wrist was (18%) in physiotherapist of Izmir Turkey14. Beibei Feng et al., conducted a cross sectional survey in 52 hospitals of china. Total distributed questionnaire were 304 and 272 dentists respond to it including 151 males and 121 females responding rate is 89.5% Frequency of wrist/hand pain is (51%) in dentists of china15. William K. Johnston et al., conducted a research in surgeons performing Hand assistive and standard laparoscopy surgery according to this survey hand wrist pain was 33% while doing hand assistive laparoscopy and 8% while doing standard laparoscopic surgery16. Bork BE, Rosecrance JC, et al., conducted a research on musculoskeletal disorders among physiotherapist working on University of Iowa and 80% of the physiotherapists respond to this survey according to this study the frequency of wrist/hand symptoms was (29.6%)17.

The purpose of this study was to calculate the frequency of work related musculoskeletal wrist pain among health care professionals and also find out the level of disability related to their work. Sample size was 227 and data were collected from Children Hospital, Jinnah Hospital and Nawaz Sharif Social Security Hospital of Lahore, Pakistan, using convenient sampling. In this study we used a valid questionnaire Patient Rated wrist evaluation (PRWE).21 This questionnaire was comprising of three demographic questions age, gender, profession, one question about pain and 15 other questions regarding pain ranging from 0 to 10 (0=No Pain, and 10=Worst Pain) and 10 about functional disability ranging from 0 to 10 (0=No difficulty and 10=Worst Difficulty) while performing these task. Inclusion criteria included health care professionals having at least 2 years of working experience and practicing minimum six hours at their own clinical setups.

Results:
Data were collected from 227 health care professionals including 117 (51.5%) males and 110 (49.5%) females. According to age the individuals were divided into three groups each comprised of 73 numbers of individuals with age 20 to 30 years, 74 individuals with age 31 to 40 years and 78 individuals with age above 40 years. The health care professionals were divided into 4 different categories doctors, dentist, physiotherapist and other professionals (nurses, speech therapist etc), as shown in table 1. According to analysis dentist have high frequency of wrist pain as compare to other professionals.
participants had severe difficulty and unable to do. Hence, overall disability level estimated was 55%.

Table 1: Frequency of wrist pain among health professionals. The analysis of data revealed the severity of pain in wrist according to profession (as shown in figure 1). According to that 20 doctors had no pain, 35 had mild and 19 had moderate wrist pain. 4 Dentists had no pain, 38 had mild and 25 had moderate wrist pain. Among Physiotherapist 22 had no pain, 18 had mild and 12 had moderate wrist pain. As shown in figure 1, other professionals showed 6 had no pain 23 had mild and 9 had moderate wrist pain. Hence it was indicated that dentist had high rate of wrist pain as compare to other professionals.

Table 2: Frequency distribution of total disability level

<table>
<thead>
<tr>
<th>Total disability level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No difficulty (0 to 20)</td>
<td>101</td>
<td>44.5</td>
</tr>
<tr>
<td>Mild difficulty (21 to 40)</td>
<td>103</td>
<td>45.4</td>
</tr>
<tr>
<td>Moderate difficulty (41 to 60)</td>
<td>23</td>
<td>10.1</td>
</tr>
<tr>
<td>Severe difficulty (61 to 80)</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Unable to do (81 to 100)</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>227</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Figure 1: Severity of wrist pain according to profession. To find the level of disability while performing different activities the scoring system of questionnaire (PRWE) was consisting of three steps: A= Sum of all the pain value out of 50, B= sum of all the functional disabilities divided by 2. And C= total sum of pain and disability level out of 100. Which was further divided into four categories 0 to 10=No difficulty, 11 to 20=Mild difficulty, 21 to 40=Moderate difficulty, 41 to 80=Severe difficulty and 81 to 100=Unable to do. Table 2 representing total disability level, according to previous epidemiological studies the risk factors for developing the musculoskeletal problems (mainly wrist problems) is due to exposure of individual to several workplace factors but one study specifically focused on single factor such as hand repetition and motion. Yasim Salik study calculated the prevalence of wrist and hand symptoms in physiotherapist was (18%) caused due to repeated wrist movement as this study showed that (16.6%) physiotherapist have wrist pain. Strong indications are found that job task which involved several risk factors (e.g. forceful wrist hand movement, highly repetitive) are responsible for developing wrist and hand symptoms. According to Bork BE, the prevalence of work related musculoskeletal wrist pain in physiotherapist was (29.6%) and these risk factors are related to their job work. Another study of health care professionals conducted by R. Berguer, the prevalence of wrist pain in health professionals using laparoscopic instrument was (8% to 12%) of surgeons. As indicated by the previous studies the work related problems that most generally prompt damage in health experts were lifting and transfer patients, working several hours with same posture, holding heavy instruments, repeated wrist movement and manual therapy procedure. As Previous studies investigated the association between physical workplace features and wrist hand problems. As table showed that many individuals had high level of difficulty in doing personal care activities and household activities due wrist pain. Through previous epidemiological review the repetitive work and strong hand vigorous task can increase the severity of work related musculoskeletal symptoms in wrist and hand. BeiBei Feng conducted a cross sectional survey according to which due to inappropriate and heavy size of dental apparatus cause musculoskeletal wrist pain in dentist and prevalence is (51%) and hand symptoms. These problems increased or worsen by doing such activities in the existence of awkward wrist and hand posture, extreme temperature and vibration. 

Figure 2: Difficulty level while doing work (job or everyday activities) according to profession.


24- Bernard BP, Putz-Anderson V. Musculoskeletal disorders and workplace factors; a critical review of epidemiologic evidence for work-related musculoskeletal disorders of the neck, upper extremity, and low back.


