

Correlation between work-related musculoskeletal wrist pain and level of disability among health practitioners: A Cross-Sectional Survey

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ABSTRACT

Background: Wrist pain is not only a common but a chronic condition among individuals. Professionals' required repetitive movements of wrist and hand were at high risk of developing this condition which ultimately affects their functional and work related activities.

Aim: To find a correlation between work-related musculoskeletal wrist pain and level of disability among health practitioners.

Methods: Total 227 participants were included in this cross-sectional survey sample size was calculated using epi.tools.com data was collected using convenient sampling at Jinnah Hospital, Social Security Hospital of Lahore, Services Hospital, Pakistan. Patient Rated Wrist Evaluation questionnaire was used for evaluations which consist of 15 questions regarding pain and functional disability level ranging 0 to 10 this questionnaire had excellent validity and reliability.

Results: Results reported strong correlation between wrist pain and level of disability ($p < 0.05$). Level of disability in doing work (job or everyday work) was 53(23.3%) participants had no disability, 103(45.4%) had mild disability, 66(29%) had moderate disability and 5(2.2) had severe disability. Total disability level was reported as out of 227 participants 101(44.5%) participants reported no disability, 103(45.4%) had mild disability and 23(10.1%) had moderate disability the overall disability level estimated was 55%.

Conclusion: This study concluded that strong correlation between musculoskeletal wrist pain related to work among health practitioners and level of disability due to pain was reported as mild to moderate.

Keywords: Musculoskeletal, Health practitioners, disability.

INTRODUCTION

The musculoskeletal conditions include numerous provocation and degenerative problems which cause pain and disability^{1,2}. Musculoskeletal problems are significantly common in various professions throughout the world. These problems are common conditions in causing long term pain and disability and can affect many individuals around the globe³. Many factors such as awkward or constant posture, repetitive movement and excessive force can trigger the musculoskeletal symptoms⁴. Among medical professionals different body ergonomic and physiological components related to their profession such as combined movement, inappropriate posture, long-term use of vibrating devices, long working hours and number of patients per day are responsible for increasing musculoskeletal dysfunction⁵. One of the common reason for development of wrist pain in health practitioners are manual dealing with repetitive movement and prolonged work using wrist and hand⁴. According to literature here are resilient association among work residence bodily loading, biomechanical loading, interior patience, pain, deficiency and lack of ability. General, literature displays resilient relation among pain, distress, loss or lack of ability and exterior loading⁶. Before clarifying the musculoskeletal wrist pain concisely defines the conception of long-lasting pain. Prior studies shown, musculoskeletal dysfunction is related to several causes as pain is directly affected by age as well as pain incidence rate is higher among females addition to that it is also common among minor class people⁷. Musculoskeletal wrist pain associated to work is describe as wrist joint pain that is produced due to recurrent movement at wrist joint also sustained force on wrist⁸. Musculoskeletal complications related to work at wrist joint and hand is affected when worker is exposed to bodily risks for extended time period.

The purpose of upper limb, bodily actions and capability of working is also reduced due to issues of musculoskeletal forearm, hand and wrist^{9,10}. Arm, wrist and hand dysfunction were noted

12% in workers of Ontario in 2014. These deformities also includes muscles dysfunction and tendons of upper limb¹¹. In Accordance with collected literature, some causes that are answerable to aggregate danger related to disease and therapeutic issues of health care professionals¹². The incidence rate of musculoskeletal problems related to work of hand and wrist was recorded as 18% among physiotherapist of Turkey. A advanced occurrence or, on the additional hand developed frequency and rate between workers which have other conspicuous summary to bodily danger causes in the work environment^{13,14}. Conventional management of upper limb dysfunction related to musculoskeletal symptoms and signs contain rest, reduced movement, accurate upper limb posture also reduced force on hand⁸. Medicinal management comprises of medicine such as analgesics aids in management of pain but extreme usage of analgesics medicine causes complications related to health comprising anemia, hypercalcemia, renal failure as well as gastrointestinal disease.¹⁵ Physical therapy management is used in reduction of pain, management comprise manual therapy, mobilization, traction, acupuncture, exercise and modalities i.e ultrasound, heat and cryotherapy application. Occasionally immobilizes and braces of wrist and hand are used to inhibit undue movement on wrist. Additional management comprises mental interventions (for instance biofeedback, reduction) and rehabilitations of soft tissues like muscle energy techniques and massage¹¹. In a cross sectional survey conducted by Beibei Feng in 52 hospitals of china. Out of 304 questionnaire, 272 dentists responded including 151 male and including 121 females. 89.5% responding rate was calculated. Occurrence of hand and wrist pain among dentists of china as 51%¹⁶.

The aim of this study was to determine correlation of musculoskeletal wrist pain related to work between health care practitioners as well as to determine disability level, as previously most of the researches were focused to find low back and cervical pain in musculoskeletal disorders but as health practitioners required long term use of wrist and hand related activities this study provide evidence to health practitioners to improved their faulty posture to avoid musculoskeletal wrist pain as well as facilitate rehabilitation team to provide appropriate treatment for this condition.

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MATERIAL AND METHODS

This survey was designed to determine the correlation between wrist pain and level of disability among health practitioners. Total 227 participants were included in this survey and data was calculated using convenient sampling from Social Security Hospital, Jinnah Hospital and social security Hospital of Lahore, Pakistan. PRWE questionnaire was used to measure level of disability validity of this questionnaire is 88%¹⁷. PRWE questionnaire consist of question related to demographic, five questions were related to measure pain, ranging 0 to 10. (0 is considered as No Pain while 10 as Worst Pain. While ten questions measured functional disability ranging from 0 to 10. 0 is considered as no difficulty while 10 is considered as Worst Difficulty. Inclusion criteria was consist of health care practitioners that were having two years working experience at least, participants having 6 hours daily working and having wrist pain in performing work related activities and wrist related task. Whereas, health Practitioners having wrist trauma, less than two years working experience and other systemic disease were not included in this study.

RESULTS

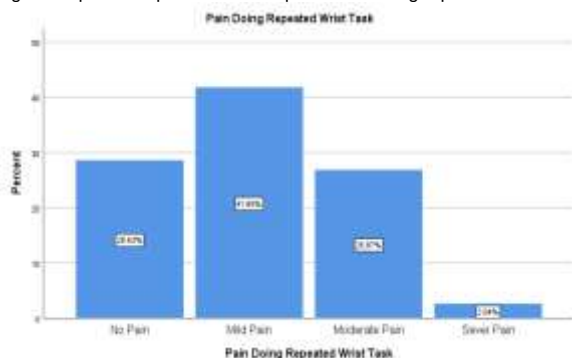
Data was analyzed using SPSS version 26. Qualitative results of this research were presented in the form of frequency tables out of 227 participants 110(49.5%) were female and 117(51.5%) were male. According to age participants were divided into three groups in which 73 participants with age 20 to 30 years whereas 116 health practitioners with age 31 to 40 years and 38 participants were above 40 years of age. The main objective of this research was to find correlation between musculoskeletal wrist pain and level of disability among health practitioners. This study proved that there is strong correlation ($p < 0.05$) between wrist pain related to profession and doing everyday activity. This study also proved that level of disability was common in dentist as their profession required repetitive hand and wrist movement and in physiotherapist as their profession required manual dealing.

Table-1: Frequency of wrist pain among health practitioners.

Profession	Frequency	%age
Doctors	54	30.9
Dentists	63	36
Physiotherapists	26	14.9
Other professions	32	18.3
Total	175	100

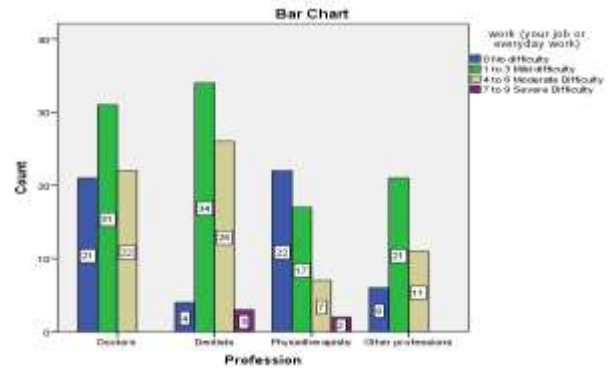
This table showed the frequency of wrist pain among health Practitioners related to their working activity according to results 54(30.9%) doctors, 26(14.9%) physiotherapists, 63(36%) dentists, whereas 32(18.3%) health practitioners belong to other Allied Practitioners (nurses, speech therapist etc.). Hence, this research provides evidence that many health professionals were suffering from work related musculoskeletal wrist pain.

Fig 1: Graphical Representation of pain while doing repeated wrist task



This graph represented the level of pain while doing repeated wrist activities according to this graph 28.63% had no pain, 41.85% had mild pain, 26.87 had moderate pain and 2.64 had severe pain. This table represented the level of disability due to wrist pain according to this table 101(44.5%) participants had No disability, 103(45.5%) had mild disability and 23(10.1%) had moderate disability .

Fig II: Graphical representation of disability level according to work and profession:



This graph represented the level of disability while doing work and everyday activities. Results showed that many of the health practitioners had mild to moderate pain while doing work related activities.

Table-II: Level of Disability due to wrist pain

Total Sum of Disability	Frequency	Percent
No disability 0 to 20	101	44.5
Mild disability 21 to 40	103	45.4
Moderate disability 41 to 60	23	0.1
Severe disability 61 to 80	0	0.0
Unable to Perform 81 to 100	0	0.0
Total Participants	227	100.0

Table III: Chi square test for work and profession:

Correlation between Pain score*Disability score			
Pain score *disability score	Pearson Correlation		.880**
	Sig. (2-tailed)		.000
	N	227	227

** . Correlation is significant at the 0.01 level (2-tailed).

As this test shows p value is <0.05 then there is correlation.

DISCUSSION

Musculoskeletal symptoms related to profession and professional working environment are common in health practitioners. Previous evidence revealed that health practitioners had prolonged interaction with patients which was the common cause of musculoskeletal symptoms in them. Musculoskeletal related wrist pain is common in health practitioners which performed prolong surgical procedures such as in doctors, dentists due prolonged usage of equipment and physiotherapists as they required manual patients dealing^{18,19}.

According to previous literature the most common reason of developing wrist pain among health practitioners was repeated hand and wrist movements due to their working activities results of previous study conducted by Yasim Salik 18% physiotherapist were suffering from wrist pain due to repetitive hand and wrist movement. Same as results of this study reported that 14.9% physiotherapist had wrist pain due to their working activities²⁰.

Another cross-sectional survey carried out by Beibei Feng et.al, reported that prevalence of wrist pain in dentist was 51% due to prolong usage of dental equipment. Similarly in present study the 36% dentists were suffering from wrist pain. Job related risk

factors of developing wrist and hand symptoms in dentists were forceful and highly repeated wrist movements²¹.

Alrowayeh et.al, in 2010 conducted a research to find musculoskeletal disorders among physiotherapist according to their results prevalence of developing wrist pain among physiotherapist was (11%)²². Past studies reported that there is strong association between working atmosphere and wrist and hand symptoms. The results of present study showed that several health practitioners had increase level of disability in performing personal care activities and job-related task. Concluded earlier repeated exertion and forceful hand wrist movement can worsen the wrist related musculoskeletal symptoms²³. Same as another research performed on health care specialists by Islam et.al, to find musculoskeletal problem according to their results the prevalence wrist pain was (62%)²⁴.

Previously investigated musculoskeletal difficulties related to work were most common hazard to health practitioners which depending upon number of patients per day, awkward posture, manual therapy, prolong equipment holding and repeated wrist movement^{25,23}.

CONCLUSION

In this study it is concluded that there is high frequency of musculoskeletal wrist pain related to work among dentist and physiotherapist whereas intensity of pain was recorded as mild to moderate. In this survey it is also concluded that there was a strong association between level of disability and wrist pain while doing activities in a certain environment. Although pain intensity was recorded as mild to moderate also very few individuals were having severe pain.

Conflict of interest: None

Declaration of interest: None

Funding source: None

Ethical approval: This study was approved by Institutional Review Board, Faculty of Allied Health Sciences of University of Lahore (IRB-UOL-FAHS/906-I/2021).

Author's Contributions: **SNF:** Acquisition of data **AH:** Acquisition of data **AN & SG:** Analysis or interpretation of data **FI:** Drafting of the Article **SNF:** Critical revision for important intellectual content

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