**“Risk factors of chronic wrist pain among novice physiotherapists of**

**Lahore”. (A Case control study)**

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 **ABSTRACT**

 **Background:** Estimating the risk factors for chronic wrist pain was one of most extensive research idea with wide application in clinical practice of an orthopaedic surgeon and a physiotherapist. Novice physiotherapist need to know accurate knowledge of performing safe techniques and appropriate use of wrist during their manual treatment. It was one of the broadest concepts of research in health promotion of novice physiotherapists.

 The Chronic wrist pain results in disturbing treatment given to the patients as well as physiotherapist.

**Objective:**

The purpose of this study is to find out the risk factors of chronic wrist pain among novice physiotherapists of Lahore.

**Material and Methods:**

This was a case control study conducted in Lahore, Pakistan in 2017. 164 subjects participated in this research. Self-structured questionnaire was uses to collect data. Data was taken from novice physiotherapists who fulfill the inclusion criteria. Data was then analyzed using spss v20, odd ratios and relative risk of risk factors were calculated.

**Results:**

Odds ratio of repetitive wrist movement, treating >8 patients, repeated excursion of same tasks, previous injury of wrist, not having rest periods during working day, and working in uncomfortable position, were 1 or more, so they are the risk factors for chronic wrist pain among novice physiotherapists.

**Conclusion:**

Repetitive wrist movement, treating >8 patients a day, repeated excursion of same task, previous wrist injury, not having rest periods during working day, and working in uncomfortable position are risk factors for chronic wrist pain among novice physiotherapists of Lahore**.**

**Keywords:**

Risk factors, chronic wrist pain, novice physiotherapist

## Introduction and Literature Review

##

**INTRODUCTION:**

 Physiotherapists are greatly at risk of developing chronic wrist pain due to physical nature of their work. Wrist pain is common among novice physiotherapists. Single event or injury does not cause these musculoskeletal disorders which only last for a short time, but they build up gradually as repeated trauma to the wrist leading to injury of joint, tendon, ligament, muscles, vessels and nerves. prevalence of work related wrist and thumb pain among physiotherapist are 62.5%.Major risk factors that cause chronic wrist pain are orthopedic mobilization, manipulation, soft tissue massage and

mobilization of joint.(1)

 Most regular cause of chronic wrist pain is due to work nature that leads to disability in novice physiotherapists. Tasks that physiotherapists perform may lead to wrist pain as repetitive movements of upper limb. Responsibilities of physiotherapists are physical in nature as they are involve in examining and treating large number of patients per day, engage in applying manual therapy, repeatedly performing same tasks, carrying and lifting of dependent or disabled persons these all contribute to develop chronic wrist pain among physiotherapists.(2)

 Novice physiotherapists are those physiotherapist having lack of confidence in their field of practice while treating patients.They are more prone to develop wrist pain and other musculoskeletal disorders while treating patients as compare to experienced physiotherapist .Novice physiotherapist are those who have <5 years of experience in practicing as a physiotherapist.(3)

Work natures of physiotherapists are physically demanding. Forceful manual techniques, repetitive movements, maneuver that required direct pressure over many joints, treating obese patients may expose physiotherapist at great risk of developing wrist disorders and many other musculoskeletal pain. Female physiotherapists are having more wrist pain then male physiotherapists.(4)

 Stress injuries that are caused by repetition of wrist movement can causes injury to soft tissues of wrist joint. The unchanged body posture for comprehensive periods of time lead to developing of repetitive injuries because of this the blood supply of tissue are compromised, finally body loses its ability to restore. Symptoms can range mild painful to pointed, crippling pain. Worsening symptoms then impair daily activities and ultimately sleep disturbance occurs due to severe pain.(5)

 Wrist ache that lasts from 6 weeks to 3months are considered chronic wrist pain .Acute wrist pain generally resolves after one week of rest .But chronic wrist pain usually impairs performance of physiotherapist working in clinical environment. A complete history taking and physical examination can evaluate the chronic wrist pain. Test can b perform such as finkelstein’s test to diagnose wrist pain .(6) Wrist pain may impair the functional characters of entire upper extremity. Wrist connect the forearm to the hand and it’s a very important anatomical structure of human body in performing activities .Normal flexion of wrist is 95 degree ,extension is 30 degrees, 10 degree is radial deviation and ulnar deviation is 15degrees.Intrinsic and extrinsic ligaments of wrist joint provide stability to the wrist, these ligament become damaged due to overuse of wrist and cause chronic wrist pain.(7)

Awkward wrist posture and unskilled techniques might cause lateral epicondylitis .Coupling movement of wrist should be used carefully to avoid any risk of developing wrist pain. Over use of wrist and poor posture usually cause chronic pain .(8)

 Manual therapies are routinely performed by physiotherapists .Soft tissue mobilizations are increasing the risk for therapists to develop thumb and wrist pain. Due to this technique neurovascular disorders and upper limb pain is also common. Most frequently mentioned risk factors for wrist pain are awkward wrist posture, forceful techniques, and repetitious movement of wrist. Prevalence noted in physiotherapist with wrist pain is 29.6%.Routinly performing activities by physiotherapists is transferring of disabled patients, help patients to perform exercise, passively moving joints, gait training to disturbed balanced patients, lifting heavy equipments, and assisting with mat activities. These work responsibilities put the physiotherapists to great risk of developing acute and chronic wrist pain.(9)

 Wrist pain is most common symptom in nearly one third of physiotherapist. Manual therapy is 3.5 times more likely to develop wrist pain among novice physiotherapists. Novice physiotherapist who have lack of experience in their field are more likely to develop chronic wrist pain, as therapist gain experience in their field of applying techniques with age they reduce the risk of wrist pain. Older physiotherapists have less risk of having wrist pain .Older physiotherapist >55 years develop strategies. In these strategies they modify the treatment techniques to reduce the risk of pain in wrist and performing less exhausted or fatiguing treatment techniques, they took help from staff in assisting during treatment like lifting patients.(10)

Manual therapy comprises a set of techniques that the therapist uses mainly his hands as the main instrument to take care of the patient. It benefits the patients but expose physiotherapists to risk of developing wrist pain because physiotherapists work for prolong period of time in uncomfortable position. Soft tissue mobilization without proper techniques may lead to wrist hand disorders in physiotherapists .(11)

 Increasing repetitive minor trauma leads to work related disorders in physiotherapist such as vibrations and repetitive use of wrist or hand without relaxing them and awkward posture of wrist and shoulder. Percussions and vibrations are primarily develop vibration syndrome which mainly effect the fingers of hand and wrist .(12)

 One of the Compression neuropathies of upper limb is a carpal tunnel syndrome .Repetitive wrist and hand activity by physiotherapists while treating patients can lead to carpal tunnel syndrome. Physiotherapy occupation is

at risk for (prevalence 15.6%) developing CTS .(13)

 Young physiotherapists below the age of 30 year are more prone of developing wrist disorders than older physiotherapists.

Lack of rest breaks while treating patients, inadequate staffing and heavy load of patients may contribute to the risk factors of wrist injury. (14)

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Manual handling tasks and those involving a static hold/standing of a patient are the tasks that are considered high risks to develop wrist pain as assessed by ergonomic risk assessment. Manual handling had a high risk score, mainly because of the awkward postures were forced to adopt to perform the task. Tasks requiring static flexions scored high because they were often performed alone and the flexion was maintained for some time. Care must be taken to avoid musculoskeletal disorders due to bad ergonomics.(15)

 Studies are conducted on musculoskeletal disorders among physiotherapists but no study was conducted before on risk factors causing wrist pain among novice physiotherapists in Lahore.

**LITERATURE REVIEW**

**A** descriptive study assessed thumb and wrist pain among physiotherapists and related it with their job. The self structured questionnaire was distributed to the participants . Work related wrist and thumb pain was 62.5% among physiotherapists. Study shows that pain was notices in right or left wrist joint or bilateral wrist pain. Injuries were caused by improper knowledge on injury prevention. Females and novice physiotherapists were found to be more prone to develop wrist related disorders. Participants with hand injuries and involve in manual therapy techniques e.g. treating excessive number of patients a day were (73%), and that of manipulation (65%), mobilization(70%) massage are (82%), and repetitions are (77%),these were most important risk factors evaluated..(1)

A cross-sectional study was carried out to assess factors such as year of work experience in physiotherapy field, body mass index, gender, and painful clinical area involved. Musculoskeletal disorders were found to be more in female therapists then male therapists. Lifting or carrying and manual techniques were reported as risk of developing of disorders among therapists Female therapists are significantly higher at risk of work-related musculoskeletal disorders than the male therapists lifting and transferring are two factors that may create wrist pain among therapists.(4)

Aust J et al**,** conducted a study to estimate factors causative to the thumb and wrist pain among physiotherapist. Comparison was conducted to differentiate between physiotherapist with wrist and thumb pain and therapists without wrist and thumb pain. Pain group reported that thumb and wrist pain was related.88%

physiotherapists altered their technique to avoid wrist pain. Participants were reported to have laxity of carpmetacarpal joint while pinch strength of right hands were reported to be decreased than left. Pain group showed decrease body mass index. Results concluded that physical work nature can affect the manual therapy technique. Due to wrist pain had altered their manual techniques because of pain in the thumb and wrist. Statistically significant differences between groups included increased right carpometacarpal joint laxity and lower body mass index for the Pain Group. Other factors were not statistically different between groups. Results showed that wrist pain can alter techniques while treating patients.(16)

 Warren Glover et al established a study to determine work related strain injuries among physiotherapists. Injury usually occurred while treating patients. Work nature of physiotherapist was repeated tasks and manual handling that lead to musculoskeletal injuries threatening the health of UK physiotherapists. It was concluded that young physiotherapists below age 30 are more prone to develop wrist pain especially first four to five years of their practice .Life time prevalence of work related injuries were as high as 90% among novice physiotherapists.(14)

Another systemic review was conducted to conclude the impact of work related musculoskeletal impairments among physical therapists. Risk factors were investigated and preventives measures were identified used by physical therapists. Findings concluded that work related disorders in physiotherapists were common and they were in high risk profession for developing wrist pain due to nature of work. So nature of work made them more susceptible to have wrist pain .(17)

Another study was conducted to evaluate the prevalence of musculoskeletal disordrrd in physical therapists of Saudia and Egypt. Causes of painful disorders related to work were assessed. The results showed that one fifth or more Egyptian physiotherapists were hurt while

applying manual therapy techniques on patients. Due to stabilizing position for prolong phase of time, injury chances were increased. There were more low back injuries and upper limb pain in Egyptian physiotherapists because of lifting, twisting and bending. Proper body mechanics were needed to improve work performance among Egyptian physiotherapists. Saudi physiotherapists are found to have wrist pain due to their work nature The Saudi physiotherapists reported highest prevalence of low back injury (33%) and neck (29%). Bending and twisting (21%) was the commonest cause that led to injuries among Saudi physiotherapists.(PTs). Lifting(21%) was the main cause that led to recurrence of symptoms. 21% of Saudi PTs avoided lifting activities where as 11% changed their work habits with improved body mechanics as a response to musculoskeletal injuries.(18)

A study investigated the event and characteristics of MDEs (musculoskeletal disorders) on physiotherapists who use manual therapy technique. There was a direct relationship between workload and the musculoskeletal disorders. Result indicated that injuries were more common among manual therapists due to the nature of their work pain was reported in wrist and hand(56.7%), cervical region (36.7%) and in upper limb (70%).(11)

Another cross sectional study uncovered the prevalence of job-related musculoskeletal disorders among physiotherapists in Sabah. Working in same position for long period of time and static wrist posture were the most important risk factors. Outcome of this study showed that the velocity of job related disorders among physiotherapists in Sabah has been found to be high due to their nature of work. The respondents felt the need to change their work techniques in order to avoid injury.(19)

 Forbes R et al evaluated the difference between novice physical therapists and experienced physical therapists and their frequency patient education and their mode of treatment and importance of practice. Results showed that the experienced physiotherapist were reported to be better in patient’s treatment and assessment of disease than the novice physiotherapists. Novice physiotherapist was reported to be less technical in applying techniques. They were reported to be poor patient educators than experienced physiotherapists. So the injury risk were more among novice physiotherapists .(3)

A study was conducted to determine the occurrence of work-related upper limb disorders in hand-intensive health care professions .Studies concluded that neck, shoulder, and wrist were more symptomatic in physiotherapists. Work related upper limb pain was reported to be due to physical handling and manual therapy techniques, lack of sufficient breaks between clinical hours. The organization and mental health were concluded to be the factors affecting performance of physiotherapists. Those participants who learned preventive measures were less symptomatic in their work related disorders. (20)

A study find out the occurrence of work related disorders over a 12 month period and job factors that cause these disorders in physical therapists. Work related disorders among physiotherapist were wrist and hand, low back, upper back and neck. These regions were involved due to transferring and lifting patients, providing support to the patients during falls, and lifting heavy utensils.115 physiotherapists experienced pain while performing manual therapy techniques and 97 while assisting patients in gait activities. These tasks were putting the physiotherapists at greater risk for developing work related musculoskeletal disorders.(21)

 Leanne Passier et al established a study to identify risk factors for work related wrist pain among health providers working in demanding clinical settings. Most regularly professed risk factors by health providers were movements and occupation posture, carrying and lifting, repetitive tasks and patient related factors. There six factors that can be risk for profession, working in physically challenging clinical role setups included organizational strategies, work allocation or work load, work environment, work practice, physical situation, training and learning.(22)

 Magan E.Fisher conducted a study to examine and determine the mode of physiotherapy service, staffing and load in trauma center. Higher caseload found to be the risk factor for developing disorders among novice physiotherapists. It was concluded that inexperienced physiotherapist were more prone to develop wrist, hand and lumber pain due to increase caseload in trauma center. Treating >8 patients were found to be a risk factor of developing musculoskeletal pain among physiotherapists.(23)

 **OBJECTIVE:**

The purpose of this study was to evaluate the risk factors of chronic wrist pain among novice physiotherapists of Lahore.

 **RATIONAL**

 The study will give awareness to novice physiotherapists about risk factors that cause wrist pain and affect their work performance as a physiotherapist while treating patients. Avoiding those risk factors novice physiotherapist will improve their performance and health related quality of life**.**

 **OPERATIONAL DEFFINATION**

Self structured questionnaire, consisting of close ended questions were derived from previous available literature was used as a tool to assess risk factors of wrist pain. Questionnaire cover 13 questions to evaluate risk factors such as orthopedic mobilization manipulation, number of patients treated a day, soft tissue massage, repetitive movements, vibration, shaking and percussions, previous wrist injury, working in uncomfortable position, repeated excursion of same task .(1)

**MATERIAL AND METHOD:**

**STUDY DESIGN:**

 Case control study design was used.

**SETTINGS:**

 Data was collected from Government & private physical therapy setups in Lahore

Lahore is second populous city of Pakistan with population of 11126285 with about 1026 registered physical therapist.

**DURATION:**

Study was completed in 6 months from 1st January 2019 to 30th June 2019

**SAMPLING TECHNIQUE:**

Convenient sampling technique was used.

**SAMPLE SIZE/ CALCULATION:**

Sample size was taken as “164” with the population size of 1026

* + - * + Sample size was calculated from Raosoft in which the margin of error was

5%

* + - * + Confidence level is 90%; respond rate of population was 85%
				+ Sample size calculated by using following

***X* =  *Z*(*c*/100)2*r*(100-*r*)**

 ***N* = *N x*/((*N*-1)*E*2 + *x*)**

 ***E* = Sqrt[(*N* - *n*)*x*/*n*(*N*-1)]**

* + - * n=sample size
			* E= margin error
			* N=population size
			* R=fraction of responses
			* Z(c/100)= critical value for the confidence level

**SAMPLE SELECTION CRITERIA**:

**Case group:**

 **Inclusion criteria:**

Novice physiotherapist with Chronic wrist pain( 6 Weeks or more)

 Male and female Physiotherapists having <5 years of working experience.

 Physiotherapist working in government & private physical therapy clinical setups of Lahore.

 **Exclusion criteria:**

Metabolic disorders e.g, osteomalacia

 Married females having child

Co morbid conditions like hypertension, diabetes, asthma etc.

**Control group:**

**Inclusion criteria:**

Without chronic wrist pain

 **Exclusion criteria:**

Metabolic disorder.e.g, osteomalacia

 Married females having child.

co morbid conditions. e.g.hypertension, diabetes, asthma etc.

**DATA COLLECTION PROCEDURE:**

The study was conducted in the government and the private physical therapy settings .A written consent was taken by the authorities of concerned setting. A case control study method was used .Self structured questionnaire was distributed to the novice physiotherapists .Questionnaire was filled by 164 physiotherapists. Demographic details of physiotherapists was collected .Objective of the study was explained to the participants. The inclusion criteria were fulfilled and data was collected after informed consent. Safety of data collected was ensured. And data that was collected, was kept confidential and was only be used for research purpose only.

**DATA COLLECTION TOOL:**

Self structured Questionnaire was used to collect data.

**ETHICAL ISHUES:**

Data was collected from novice physiotherapists and privacy of their data was ensured.

Study will not harm the ethical values of physiotherapists. The study was conducted after the approval from authorities and bodies of medical education departments.

**STATISTICAL ANALYSIS:**

Statistical data was analyzed by using SPSS software 20. Frequency and percentage was calculated on the base of categorical variables. Odds ratio and relative risk was calculated.

**RESULTS AND ANALYSIS:**

**Socio-demographic profile Table 1:**

|  |  |  |  |
| --- | --- | --- | --- |
| Gender of subjects  | With wrist pain  Cases   | Without wrist pain  Controls  |  Total  |
| Males  |  29  |  37  |  66  |
| Females  |  53  |  45  |  98  |
| Total  |  82  |  82  |  164  |

Out of 164 subjects 82 were cases and 82 were controls. from 82 cases 29 were males and 53 were females.And from 82 controls 37 were males and 45 were females having wrist pain.out of total 164 subjects 66 were males and 98 were females.

**Table 2.**



Out of total 164 physical therapist, 82 were cases and 82 were controls.

**Odd ratio:**

**Table 3: Odd ratio & P .Value**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variable**  |  | **With wrist pain** **(Cases=82)**  | **Without wrist pain** **(Control=82)**  | **Total**  | **OR(90%CI)**  | **p-value**  |
| Repetitive wrist  | Yes  | 72  | 70  | 142  | 1.234(.51-3.040)  | .410  |
| No  | 10  | 12  | 22  |
| Total  |  | 82  | 82  | 164  |
|  |  |  |  |  |  |  |
| Mobilization and manipulation  | Yes  | 73  | 75  | 148  | .757(.268-2.140)  | .397  |
| No  | 09  | 07  | 16  |
| Total  |  | 82  | 82  | 164  |   |
| Treating >8 patients a day  | Yes  | 55  | 52  | 107  | 1.175(.618-2.237)  | .372  |
| No  | 27  | 30  | 57  |
| Total  |  | 82  | 82  | 164  |   |
|  |  |  |  |  |  |  |
| Percussion ,shaking and vibration  | Yes  | 54  | 58  | 112  | .798(.413-1.543)  | .307  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | No  | 28  | 24  | 52  |  |  |
| Total  |  |  82  | 82  | 164  |   |  |
| Orthopedic manipulation  | Yes  | 44  | 48  | 92  | .820(.442-1.521)  | .319  |
| No  | 38  | 34  | 72  |
| Total  |  | 82  |  82  | 164  |
| Soft tissue mobilization  | Yes  | 70  | 78  | 148  | .299(.092-.970)  | .031  |
| No  | 12  | 04  | 16  |
| Total  |  | 82  | 82  | 164  |
| Previous injury of wrist  | Yes  | 38  | 37  | 75  | 1.050(.568-1.942)  | .500  |
| No  | 44  | 45  | 89  |
| Total  |  | 82  | 82  | 164  |
| Repeated excursion of same task  | Yes  | 50  | 50  | 100  | 1.000(.534-1.873)  | .564  |
| No  | 32  | 32  | 64  |
| Total  |  | 82  | 82  | 164  |
| Not having rest periods during working day  | Yes  | 44  | 43  | 87  | 1.050(.569-1.939)  | .500  |
| No  | 38  | 39  | 77  |
| Total  |  | 82  | 82  | 164  |
| Working in uncomfortable position  | Yes  | 35  | 34  | 69  | 1.051(.566- | .500  |
|  | No  | 47  | 48  | 95  | 1.954)  |  |
| Total  | 82  | 82  | 164  |  |
|   |   |   |   |   |   |   |
|   |   |   |   |
|   |   |   |   |
| \*p-value significant at or less than 0.05  |  |  |  |  |   |

**Results :**

After complete data provided by different physiotherapists working in Lahore data was analyzed in which 82 were cases and 82 were controls groups in the sample size of 164. The odd ratio of repetitive wrist movement was 1.234(.51-3.040). In cases it shows that it is a risk factor for chronic wrist pain among novice physiotherapists.

The odd ratio of treating >8 patients was 1.175(.618-2.237). In cases it shows that it is a

risk factor for chronic wrist pain among novice physiotherapists.

The odd ratio of Repeated excursion of same task was 1.000(.534-1.873). In cases it shows that it is a risk factor for chronic wrist pain among novice physiotherapists

The odd ratio of Previous injury of wrist was 1.050(.568-1.942). In cases it shows that it is a risk factor for chronic wrist pain among novice physiotherapists.

 The odd ratio of Not having rest periods during working day was 1.050(.569-1.939). In cases it shows that it is a risk factor for chronic wrist pain among novice

physiotherapists.

The odd ratio of Working in uncomfortable position was 1.051(.566-1.954). In cases it shows that it is a risk factor for chronic wrist pain among novice physiotherapists.

The odd ratio of mobilization and manipulation was .757(.268-2.140) which shows that this is not a risk factor among novice physiotherapists for chronic wrist pain.

The odd ratio of Percussion, shaking and vibration was.798 (.413-1.543) which shows that this is not a risk factor among novice physiotherapists for chronic wrist pain.

The odd ratio of Orthopedic manipulation was .820(.442-1.521) which shows that this is not a risk factor among novice physiotherapists for chronic wrist pain.

 The odd ratio of Soft tissue mobilization was .299(.092-.970) which shows that this is not a risk factor among novice physiotherapists for chronic wrist pain.

**DISCUSSION:**

 The study sought to investigate the risk factors associated with chronic wrist pain among novice physiotherapists of Lahore. Results of study identify that repetitive wrist movement, treating >8 patients a day, repeated excursion of same task, previous wrist injury, not having rest periods during working hours, working in uncomfortable position are risk factors of chronic wrist pain among novice physiotherapists. This is similar to the study conducted by **Barnes R** who documented that repetitive wrist movement (79%), treating many patients a day (73%) and uncomfortable position (78%) is a risk factor for chronic wrist pain among novice physiotherapists. His study proves that work related wrist pain occurs in first five years after qualifying. His study’s result showed that

orthopedic manipulation is a major risk factor but my study showed that orthopedic manipulation is not a risk factor for chronic wrist pain among novice physiotherapist (1).

This Study result showed that repeated excursion of same task is a risk factor for working as a physiotherapist for wrist pain. Similar results identified by the study conducted by **J F Thomsen** that repeated excursion of same task is a major risk factor during manually treating patients. His study also indicates thatthe increasing level of force during treatment is the risk factor for wrist pain too. Study’s results showed that working in uncomfortable position is not identified as a risk factor but this study results have shown that working in uncomfortable position for long time is a risk factor for developing a chronic wrist pain.(24)

As a physiotherapist treating patients in uncomfortable position effect the therapists own self. Study results have shown that uncomfortable position is risk factor for wrist pain among novice physiotherapists. The study results of **Rungarun**

**Kriangkrai** alsoshowed that poor working posture of wrist and uncomfortable positions can cause wrist pain. Studies also show that ergonomic factors can also contributes in wrist pain among novice physiotherapist.(25)

My study results showed that lack of rest periods during working hours can lead to wrist pain among novice physiotherapist. A previous study conducted by **Dennis Van Roeke** alsoshowedthat one way to prevent your muscles from getting tired is to rest the muscles doing most of the work. A “micro “break, in which you use different muscles or pause for even a few seconds, can help. This relieves your muscles more effectively than uninterrupted periods of work with only one or two longer rest breaks. So not having rest period is also a risk factor for wrist pain.(25)

The results of this Study showed that mobilization and manipulation, percussion, vibrations, orthopedic manipulation and soft tissue mobilization were not a risk factor for chronic wrist pain. As they showed odd ratio less than 1.it could be assumed that it is the physical nature of work that predispose to injury. Experienced Physiotherapist has better

 knowledge of body mechanics with experience that helps in injury prevention.

 Our Study results showed that work load of treating many patients a day were considered as a risk factor that lead to wrist pain. So according to study results treating >8 patients a day is a risk factor that cause wrist pain among novice physiotherapists. Similar results were concluded by **AO Obembe** that work load can be disturbing for physiotherapists. And not having rest breaks during clinical practice can cause wrist pain. Physical nature of their work makes them more susceptible for wrist pain.(26)

 This Study results showed that

 soft tissue mobilization was not a risk factor for chronic wrist pain among novice physiotherapists. Study conducted by **Byron E Bork** concluded results that joint mobilization and soft tissue mobilization is a risk factor for wrist pain.(26)

 Treating more patients and working in uncomfortable position is risk factor for chronic wrist pain among novice physiotherapists. Similar study conducted by **Madiha Ashfaq** concluded similar results that treating large number of patients in one day and working in same position for long time were risk factors for wrist pain that can impair work performance.(27)

**CONCLUSION:**

Study results showed that repetitive wrist movement, treating >8 patients a day, repeated excursion of same task, previous injury of wrist, not having rest periods during working hours, and working in uncomfortable position are risk factors for chronic wrist pain among novice physiotherapists.

**LIMITATIONS**

This Study has analyzed 12 risk factors in novice physiotherapist. Further studies need to be conducted to found more risk factors among novice physiotherapists of Lahore.

Results could be more representative for the population if randomized sampling technique was used.

**RECOMMENDATIONS:**

* 1. There should be breaks during job hours
	2. Novice physiotherapists should work with experienced physiotherapists to learn about proper safe techniques
	3. Physiotherapists should treat less than 8 patients a day

**DECLARATIONS**

We acknowledge this study to our parents and teachers.

The contribution from both authors almost same.

No financial assistance or fund taken in this research.

There is neither any conflict of interest nor any ethical issue.

Informed consent taken from all participants and data collected on performa. Identity kept secret.

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  **APPENDIX**

 **APPENDIX A**

**CONSENT FORM:**

Respected participant, the study you are going to participate is**" Risk factors of chronic wrist pain among novice physiotherapists in Lahore”** Please give approval of your participation by filling the following form.

 I confirm that I have read and understand the information for the study.

##  I understand that taking part is voluntary that I am free to withdraw any time,

without

giving any reason.

 I agree to take part in this study and researcher having the following personal detail for the purpose of contacting me directly to arrange a research interview.

Name; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Gender; \_\_\_\_\_\_\_ Age; \_\_\_\_\_\_\_ Date; \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phone no; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Setting name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Address;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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 **APPENDIX B**

**QUESTIONNAIRE**

 **SELF STRUCTURED QUESTIONAIRE**

**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Age: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Gender: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Year Of Practice: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Work Place: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Contact:**

* 1. Do you ever experience wrist pain for more than 6 weeks ?

 Yes [ ] No [ ]

* 1. Do you spent <5 years in working as a physiotherapist?

 Yes [ ] NO [ ]

* 1. Are you involved in repetitive wrist movement?

 Yes [ ] No [ ]

* 1. Do you involve in mobilization and manipulation?

 Yes [ ] No [ ]

* 1. Are you treating >8 patients a day?

 Yes [ ] No [ ]

* 1. Do you perform percussions?

 Yes [ ] No [ ]

* 1. Do you involved in orthopedic manipulation?

 Yes [ ] No [ ]

* 1. Do you perform soft tissue mobilizations?

 Yes [ ] No [ ]

* 1. Do you have any previous injury of wrist?

 Yes [ ] No [ ]

* 1. Do you involve in repeated excursion of same task?

 Yes [ ] No [ ]

* 1. Do you have rest periods during the day?

 Yes [ ] No [ ]

* 1. Do you perform shaking and vibration?

 Yes [ ] No [ ]

* 1. Do you work in uncomfortable position?

 Yes [ ] No [ ]

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