Prevalence of Wrist Pain among the Professional Bike Riders in Dhaka City

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka for acceptance of thesis dissertation entitled.

Prevalence of Wrist Pain among the Professional Bike Riders in Dhaka City

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DECLARATION

This work has not previously been accepted in substance for any degree and isn't concurrently submitted in candidature for any degree. This dissertation is being submitted in partial fulfillment of the requirements for the degree of B.Sc. in Physiotherapy. I confirm that if anything identified in my work that I have done plagiarism or any form of cheating that will directly awarded me fail and I am subject to disciplinary actions of authority. I confirm that the electronic copy is identical to the bound copy of the Thesis.

In case of dissemination, the finding of this project for future publication, research supervisor will highly concern, it will be duly acknowledged as graduate thesis and consent will be taken from the physiotherapy department of Saic College of Medical Science and Technology (SCMST).

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CONTENT

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Acronyms

PRWHE Scale: Patient Rated Wrist/Hand Evaluation.

PRWE: Patient Rated Wrist Evaluation.

SD: Standard Deviation.

TFCC: Triangular fibrocartilage complex.

ECU: Extensor Carpi Ulnaris.

MCPJ: Metacarpophalangeal joint.

WHO: World Health Organization.

UCL: Ulnar Collateral ligament.

PIP: Proximal Inter Phalangeal Joint.

VDT: Visual Display Terminals.

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Abstract

Purpose: The aim of this study to determine the prevalence of wrist pain among the professional bike riders in Dhaka city. ***Objective:*** This study's objective was to determine the prevalence of wrist pain. Assess the severity of the pain, determine the duration of riding time of the participants, assess the level of the functional activities, examine the fitness of motorbike, and determine the sociodemographic characteristics of the participants. ***Methodology:*** The descriptive type of cross sectional study was conduct from January to June 2023. Convenience sampling technique were applied for this study, in this study sample size was (n= 206), method of data collection was face to face interview, used Questionnaire, PRWHE Scale**.** Data was analyzed by using SPSS (Statistical Package for Social Science) (version 25). ***Result:*** This study Mean ±SD = 33.39±6.873; about 5.4% participants age group 20-24; 29.7% participants age group was 25-29; 23.4% participants age group was 30-34; 23.4% participants age group was 35-39; 11.7% participants age group was 40-44; 3.6% participants age group was 45- 49; and 2.7% participants age group was 50-55. Underweight was 6.3% participants, normal weight was 70.3% participants and overweight was 23.4% participants. <4 hour =15.5%, 5-6 hour = 27% and >6 hour = 57.7%; 6 month (12%), 1 year (8%), >1 year (80%). Comfortable 68.5% and uncomfortable 31.5%. Bike fit to the body was 87.4% participants and 12.6% was not fit to the body. Use of gloves 41.4% participants and 58.6% participants was not using a gloves; The study revealed that, 64% participants was wrist pain and 36% participants was no wrist pain. There was no statistically significant association between age and wrist pain and BMI and wrist pain, There was highly statistically significant association between average riding hour and wrist pain and bike fits of the body and wrist pain was statistically nearly significant. ***Conclusion****:* From the database, it was found that, most of the bike riders suffered by wrist pain. The study showed that, the age group was 20-55 years of rider among the 64% bike riders suffered by wrist pain. It was also found that, a standard prevalence. The investigator used PRWHE (patient rated wrist and hand evaluation) scale.

Key words: *Prevalence, Wrist pain, Bike rider.*

CHAPTER –I INTRODUCTION

1.1 Background:

One of the most significant structural components of the human body is the hand. The most complex thing a human mind could come up with would only exist in theory without human hands. The alternative word for hand was a means of profit. A loss of hand functions results in a loss of earning potential. We need to use our hands for every significant task in daily life. If a person loses one or both of his hands, he become disabled and unable to carry out his typical daily task.

Bangladesh sees a lot of hand injuries. A person was more likely to get hand injuries in many professions owing to lack of expertise, inadequate training, performing uncommon tasks, working overtime, worrying about personal matters, being ill, employing alternative work methods, being distracted, and rushing (Islam et al., 2017).

Accidental injuries have long been acknowledged as the leading cause of disability and fatalities in our cultures. There is widespread knowledge that hand injuries is prevalent in Pakistan. Numerous professions render a person defenseless against hand wounds due to lack of training, carrying out unusual tasks, working long hours, personal stress, being ill, breaking down equipment/materials using vigorous work techniques, being diverted, and rushing, all of which contribute to the increased rate of hand wounds in Pakistan (Ali et al., 2018).

In this city, motorcycle use is extremely prevalent. Which is the main factor responsible for motorcycle accidents. The use of sedative medicine by the drivers, overloading, and disregard for traffic laws are all contributing factors in these accidents. In India, a study on accidents and helmet use was conducted. There are not many studies that focus on the same pattern of limb injuries as this one. In Jamaica, a study on motorcycle riders trauma was conducted, He discovered that discarding safety precautions result in severe limb damage (Gillani et al., 2018). The wrist and hand are the most crucial body components for daily activity and are danger to severe injury. Wrist and hand injuries make up to patients seen in emergency care. Despite the fact that these injuries are not life-threatening, the standard of care for traumatic wounds is the prompt restoration of all damaged tissue structures. Thus, for therapeutic care, early detection off the affected tissue is crucial (Karabay, 2013).

In South Korea, bicycle and bikes are the primary modes of transportation and recreation. However, injuries are frequently caused by the use of two- wheeled vehicles. Damage is a significant contributor to mortality and morbidity among teenagers and younger. Motorbike are prone to falling since they can only balance on two wheels. They also have a high likelihood of accidents because of the impact of the environment and road surface (Yun, et al., 2022).

Between 6.6 and 28.6% 0f all musculoskeletal injuries occur as hand injuries, which are the most common lesions in the body. Globally abrasions are the most often reported injuries. Broken bones, dislocated joints and torn ligaments are other common lesions. Both in the working and no working populations in Mexico, the epidemiology of wrist and hand injuries is not well characterized, and there is np national record of the hand injuries and associated impairment (Berezowsky C and Fresnedo J., 2021).

Bikers are significantly more likely to sustain an over use injury. Due to the excessive physical effort required for riding, there is a danger for overuse issues (Lebec, Cook, and Baumgartel., 2014). Biking is a major cause of traumatic injuries, especially hand and wrist wounds (Bush, et al., 2013).

The physical demands of mountain riding, however, make athletes vulnerable to overuse ailments. Mountain bikers, like road cyclists, must endure awkward or painful position and perform repetitive motions (Sabeti-Aschraf, et al., 2010).

The extra difficulties cause the bike and/or the rider's body to absorb unpredictable occurring vibration forces (Sabeti-Aschraf, et al., 2010).

A few publications have focused on participants over use syndrome even though the majority of mountain bike research discusses severe injuries. The buttocks, cervical spine, lumber spine, fingers and hands were the most frequently affected body parts with 90% of research participants reporting discomfort in these location.

Hand injuries are very common, and it's widely known that they affect people's ability to adjust physically, emotionally, and functionally. An increasing number of physiological factors are being used to explain how people react to health issues, including hand injuries (DClinpsych et al., 2017).

1.2 Justification:

Dhaka is a busy city. Dhaka city is a very populated place where many people live. In the urge of life everyone is connected with some work. They have to travel to and from the work place by moving in different vehicles to carry out these daily activities at the right time. Many people cannot reach workplace on time due to excessive human pressure, car pressure, and huge traffic signals. They use transport vehicles such as buses, taxi, rickshaw, cars etc. Among these, now they give more important to the Bike for movements.

A bike is a very small vehicle. Which is very difficult to control by frequent braking in extra jams. This busiest road in Dhaka still requires frequent braking and gear changes. Due to excessive jams and traffic signals in Dhaka city, one has to brake the bike and change the gear very frequently, which puts extra stress on hand and wrist.

Wrist and hand pain is a leading problem in bike riders and is increasing day by day due to faulty posture during bike riding. Most of the people use motorcycles as their main vehicle to avoid heavy traffic in this city. There are many people in Dhaka who make a living by riding motorcycle. They have to ride motorcycle most of the day. This causes many types of problem in their hand and wrist. Although there has been research on this in foreign countries, no research has been done on this in Bangladesh.

So, I want to do the research because it will help those who are riding bikes, those who are learning to ride bikes, and those who want to do research on this related topic in the future can take various information from my study and this study will help them in their research.

1.3 Research Question:

What is the prevalence of wrist pain among the professional bike riders in Dhaka city?

1.4 Objectives of the study:

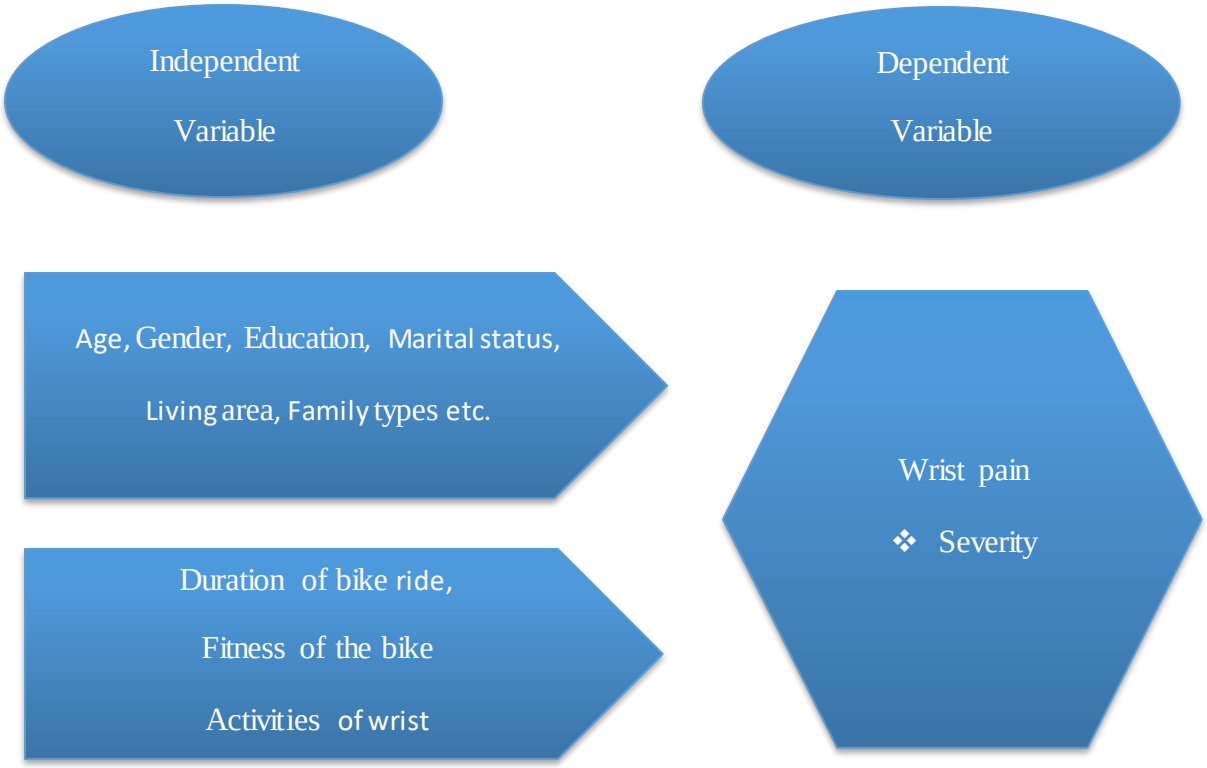
1.4.1 General objective:

- To determine the prevalence of wrist pain among the professional bike riders in Dhaka city.

1.4.2 Specific objective:

- To calculate the prevalence of wrist pain among the professional bike riders in Dhaka city.
- To assess the severity of the pain of the study subjects by PRWHE scale.
- To determine the duration of riding time of the participants.
- To assess the level of the functional activities of the bike riders.
- To examine the fitness of motorbike with the rider.
- To determine the sociodemographic characteristics of the participants.

1.5 Conceptual framework:



1.6 Operational Definition:

Prevalence: Prevalence refers to the total number of individuals in a population who have a disease or health condition at a specific period of time, usually expressed as a percentage of the population.

Injury: Injury is the term for physical harm brought on by an outside force. Accidents, falls, hits, weapons, and other factors could be to blame for this.

Wrist: wrist is the joint at the end of forearm. It's the hinge between arm and hand that lets reposition of hand. Hand begins where wrist ends. It includes palm, fingers and thumb.

Pain: "An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage."

Bike riders: The practice of racing or riding a bike, motorcycle, or other comparable vehicle.

Questionnaire: The PRWHE is a region-specific outcome measure created to assess wrist and hand pain and disability. It emerged from the Patient-Rated Wrist Evaluation (PRWE), which was created and validated initially for wrist-related diseases.

Chapter-:II Literature Review

Motorcycles made up more than 65% 0f the nation's 2.9 million registered motor vehicles. This high percentage was unavoidable because motorcycles were inexpensive, widely available, and had various road conditions across the nation (Pervaz., et al. 2020).

Injuries to the wrist and hands were frequently accompanied with discomfort, ongoing disability, decreased productivity, and a decline in quality of life. According to estimates, wrist and hand injuries were the most expensive since they were both frequent and result in indirect production losses (De Putter., et al. 2012). Bangladesh had the highest Asian rate of motorcycle deaths at 28.4 per 10,000 motorcycles (Nguyen, 2013).

Road accidents and fatalities were becoming a growing public health concern in Bangladesh, with over 2,700 fatalities and 3,100 reported crashes annually for the past 19 years. The WHO (2013) predicted more than 20,000 despite the fact that the average annual reported numbers over the previous five years have been about 1,900 and 2,000, respectively. Nationwide, traffic accidents cause fatalities per year. Walking, bicycling, riding motorcycles, and using non-motorized para-transit vehicles are all categorized as Vulnerable Road Users (VRUs) in relation to these fatalities, making up over 70% of the total. Accidents using VRUs were much more likely to include motorcycle crashes. The percentage of motorcycle fatalities increased from 3% in 1998 to 22% in 2017. However, the actual number of fatalities should have been at least four times higher than what was publicly reported (Hoque., et al. 2014). The most frequent type of carpal bone injury was scapholunate fractures (Sendher, R. and Ladd, A.L. 2013).

This hyperextension wrist injury was more likely to occur in hands that were pronated or radially deviated. The symptoms might range from minor swelling and limited range of motion to incapacitating wrist pain. Wrist sprains frequently occurred in the distant past with scaphoidal nonunions. Athletes who have this ailment will feel excruciating pain in the radial side of their wrists, along with axial loading of the thumb or pincer grasp (Avery., et al. 2016). In athletes, De-tenosynovitis Quervain's was the most common tendinopathy (Rumbell., et al. 2005).

In sports like volleyball or water polo, acute wrist overstretching or constant wrist flexion can result in tendonitis of the flexor carpi radialis (Brink, et al. 2015). The triangular fibrocartilage complex (TFCC) should also be examined by the doctor because an ECU tendonitis-causing peripheral tear can occur there. Radiographic testing was rarely done in order to rule out potential causes of discomfort in the ulnar-sided wrist. A dynamic evaluation can be utilized to check for tendon subluxation or dislocation, and ultrasonography (US) can be used to identify inflammatory alterations (Campbell., et al. 2013).

University of Engineering and Technology of Bangladesh (BUET). According to the analysis, the majority (74%) of motorcycle fatalities took place in rural areas. The highest fatality rate (45%) was associated with national highways among the different types of roads. 26 was the average age of the victims. Age of 30 or younger (22%). 88% of the motorcyclists involved in fatal collisions were not wearing helmets. Head-on collisions accounted for 49% of all fatalities, followed by rear-end collisions (29%), and sideswipe collisions (12%) (Pervaz., et al. 2020).

The majority of the stress was absorbed at the radiocarpal joint at the wrist. In the ulnar neutral wrist, the distal ulna carried around 20% of the forces. Greater forces operating on the ulnocarpal joint as the wrist grows more ulnar positive cause ulnar-sided wrist pain. Ulnar positive may be a result of distal radius physeal stoppage, a natural anatomical variance, or a dynamic condition brought on by grip and pronation (Tamaino, M.M., 2000).

Another contributing factor to ulnar-sided wrist discomfort was injury to the TFCC, particularly in athletes who hold and rotate baseball bats, tennis racquets, or golf clubs. The TFCC is a soft tissue complex that supports the distal radioulnar joint. Additionally, it extends the radial articular surface of the carpus on the distal ulna by acting as a load-bearing structure (Geissler, W.B. and Burkett, J.L., 2014).

The most frequent and severe complication of hyperextension injuries was wrist instability. During contact sports like football or rugby, the player was frequently in an impact position, which can cause wrist supination, ulnar deviation, and hyperextension injuries. Direct impacts from a golf club with the ground or a baseball bat when "checking" a swing can result in hook of the hamate fractures. Thumb metacarpophalangeal joint (MCPJ) abduction moments can cause injury, such as when someone falls onto an extended hand with the thumb abducted (Avery., et al. 2016).

Sports like skiing, basketball, and football frequently resulted in ulnar collateral ligament (UCL) injuries to the thumb (Rhee, P.C., et al. 2012). Acute injuries were frequently characterized by pain, ecchymosis, and edema on the ulnar region of the thumb MCPJ. The stress test that involved flexing and extending the thumb by 30 degrees was the most important aspect of the physical examination (Tang, P., 2011). The majority of fractures observed in the emergency room (10% of all fractures) were metacarpal and phalangeal fractures (Immerman, I., et al. 2014).

Finger, hand, and wrist contusions, hand and wrist lacerations, extensor tendon damage, and finger dislocations were most frequently caused by direct blunt trauma. 7.83% of injuries were brought on by overextending a joint, whereas 6.96% were brought on by fist-punching an item. All fractures of the fingers, including those of the thumb, metacarpals, and distal radius, were primarily caused by falls. In 4.21% of cases each, injuries from doors and injuries from sharp objects occurred (Berezowsky., and Fresnedo. 2021).

Not all fractures result in overt deformity, despite the possibility of edema, ecchymosis, and deformity. A reduction maneuver should not be performed on patients with apparent deformity without first undergoing radiographic or fluoroscopic assessment to determine that the specific fracture, dislocation, or fracture dislocation is being treated appropriately (Cotterell, I.H. and Richard, M.J., 2015).

When the wrist was in flexion, an axial load can cause metacarpal base fractures. The distinctive metacarpal fractures of the thumb and small finger were referred to by eponyms like Bennett and reverse-Bennett fractures. Bennett fractures can occasionally result in a substantial displacement because the base of the shaft is frequently pulled proximally and in abduction by powerful muscle forces. It was preferable for an intra-articular fracture to have acceptable alignment to reduce the risk of posttraumatic arthritis symptoms (Bushnell, B.D.,et al. 2008).

Baseball was the most often examined sport (eight studies), followed by football (seven), boxing (six), and basketball (five). Specific injury type covered in 29 out of 32 studies totaled 792 injuries. The most frequent injuries (n = 273; 34.5%) were metacarpal fractures, followed by injuries to the thumb collateral ligament (n = 110; 13.9%), phalangeal fractures (n = 87; 11.0%), and scaphoid fractures (n = 56; 7.1%). The overall operational rate was 18.3% (n = 708 of 3867) (Lehman., et al. 2020).

The transverse, sagittal, and oblique fibers that make up the sagittal bands can be damaged by a clenched fist strike over the MCPJ (Melone, C.P., et al. 2009). Acute rupture or chronic attenuation of the triangle ligament at the distal end of the central slip might result from volar dislocation or forceful flexion at the PIP joint. Basketball and volleyball players had these injuries more frequently (Weiland, A.J., 2012).

Due to the great demand placed on the flexor tendon system in the hanging and crimping positions, closed annular pulley ruptures happen most frequently in rock climbers (Schöffl, V.R. and Schöffl, I., 2006). Most frequently in the middle and ring fingers, pulley ruptures affect the A2 or A4 pulleys. Previous research assessed the loads encountered during these risky moves and the force necessary to cause an A2 pulley rip, determining that climbers were more at danger (Roloff, I., et al. 2006).

A mallet finger injury was described as a disruption of the terminal extensor tendon from the distal phalanx, either with or without an avulsed bone fragment. The phrase "baseball finger" originated as a result of its popularity in baseball" (Gaston, R.G. and Loeffler, B.J., 2015). However it can also be observed in rugby, basketball, and football (Chauhan, A., et al. 2014). An extended DIP joint's strong flexion was the mechanism of damage.

A fingertip that was "drooped" in flexion and unable to extend at the DIP joint was a physical sign of mallet fingers. Even though they were common, dorsal DIP edema and ecchymosis were frequently unexpectedly painless when there was no involvement of the bones (McMurtry, J.T. and Isaacs, J., 2015).

Over 15% of occupations, including office workers, nurses, and others, were afflicted by wrist and hand musculoskeletal issues (Coggon, D., et al. 2019). Physical factors include frequent hand use, poor posture while using a computer, and extended exposure to visual display terminals (VDT) such a computer, keyboard, and mouse were all linked to wrist and hand problems (Lund, C.B., et al. 2019).

Athletes frequently sustain hand and wrist injuries, which account for 3 to 25% of all sports injuries. Up to 25% of all sports-related injuries involve the hand or wrist (Rosenbaum., and Awan. 2017).

The majority of the wounds, mangling hand injuries, fingertip injuries, open and closed fractures of the long fingers, and two cases of digit amputation were caused by compression injuries, which were present in 3.21% of all cases. 2.29 percent of the cases had motor vehicle injuries.

The most frequent injuries they were linked to were contusions, long finger and first metacarpal fractures, distal radius fractures, open fractures of the fingers and metacarpals, extensor tendon injury, carpal dislocation, and one case of mangling hand injury. 1.65% of injuries were caused by industrial machinery, whereas 1.10% of incidents used chainsaws and grinding machines. Industrial equipment was primarily to blame for hand injuries and one or more finger amputations. Finger amputations, open metacarpal and finger fractures, and extensor tendon injuries were all brought on by chainsaws and grinding equipment. Dog leashes or ropes can cause finger and metacarpal fractures, mangling hand injuries, fingertip injuries, and flexor tendon injuries when they are torn. Approximately 6.50 percent of all cases were unrelated to traumatic injury mechanisms (Berezowsky., and Fresnedo. 2021).

Before knee and lower limb fractures ($562 million), hip fractures ($532 million), and skull-brain injuries ($355 million) in terms of cost, hand and wrist injuries accounted for $740 million in 2007 (De Putter., et al. 2012).

The PRWHE is a region-specific outcome measure created to assess wrist and hand pain and disability. It emerged from the Patient-Rated Wrist Evaluation (PRWE), which was created and validated initially for wrist-related diseases. The same 15 elements are shared by both instruments, although they are divided into two domains: function (5 items) and pain (10 items). However, the PRWHE includes two optional aesthetics questions and refers to the wrist and/or hand rather than the wrist alone. Specific activities and regular activities are additional categories for function (5 items each). For each item, an 11-point number scale (0–10) is used. The scoring method is straightforward: to get a score out of 100, the functional scores are summed, divided by 2, and then added to the pain ratings. Less discomfort and better function are indicated by lower scores (MacDermid., and Tottenham. 2004). Health-related patient-rated outcome (PRO) measures must be created from a solid conceptual foundation that justifies and distinctly describes what and how it seeks to measure(Holmbeck, G.N. and Devine, K.A., 2009). The level of disability validity of the PRWE questionnaire was measured at 88%17. In addition to demographic questions, the PRWE questionnaire included five items that measured pain on a scale of 0 to 10. The pain scale goes from 0 to 10, with 10 being the worst. Ten questions, ranging from 0 to 10, were used to quantify functional impairment. No difficulty is rated as 0, while worst difficulty is rated as 10 (Fatima., et al. 2022).

CHAPTER-III METHODOLOGY

3.1 Study design:

It was a descriptive type of cross sectional study carried out with the objective of determine the prevalence of wrist pain among the professional bike riders in Dhaka city.

3.2 Study area:

Data were collected from professional bike riders in Dhaka city.

3.3 Study period:

The duration of study work was 1year from June 2022 to July 2023.

3.4 Study population:

Professional bike riders in Dhaka city constituted the study population for the present study.

3.5 Sample size:

We know that,

$$n = \frac{z^2\, p(1-p)}{d^2}$$

Here,

n = Required sample size.

z = Confidence level at 1.96.

p = p is the prevalence taken as 16% or 0.16 (Darwish,M.A et al., 2013).

d = Margin of error at 5% (Standard value of 0.05).

$$n = \frac{z^2\, p(1-p)}{d^2}$$

$$= \frac{(1.96)^2 \times 0.16(1-0.16)}{(0.05)^2}$$

$$= \frac{3.84 \times 0.16 \times 0.84}{0.0025}$$

$$= \frac{0.5160}{0.0025}$$

$$= 206$$

So, Sample size n= 206

3.6 Sampling technique:

Convenience sampling technique was used to select the participants for the present study.

3.7.1 Inclusion criteria:

Above 18 years of age and below 60 years of age

Professional bike riders.

Those above 6 month who are riding bike.

3.7.2 Exclusion criteria:

Recent operation.

Those who ride bike occasionally.

Those who do not have a driving license.

3.8 Method of data collection: Face to face formal interview technique was adopted to collect information.

3.9 Instrument of data collection: A pre tested structured questionnaire was prepared for collection of relevant data, PRWHE Scale**.**

3.10 Tools of data collection: Measuring tape, weighing machine.

3.11 Procedure of data collection: Data from the participants (professional bike riders) were collected from different road side in Dhaka city. Respondents for the study from my study was selected by convenience sampling technique. After selection of one respondent. I introduced myself and told him the aim and objectives the study. Obtaining verbal informed consent I started interview. The relevant data from the professional biker's respondents were collected by using the pretested questionnaire. The interview was completed with thanks to the professional bike riders.

3.12 Data management: At the end of each day the collected questionnaires were checked for any error or inconsistency. Necessary corrections were made. The recorded data were coded accordingly for entry into the SPSS-25 version program.

3.13 Data analysis:

Descriptive analysis was done by SPSS-25 version program according to the objectives of the study. It includes percentage, mean, median, standard deviation, frequency. Association between age and wrist pain, BMI and wrist pain, bike fit to the body and wrist pain, use gloves and wrist pain and average riding hour and wrist pain, examined by chi-square test.

3.14 Data Presentation: Result of study has been presented with table, figure. Adequate description also included in the result.

3.15 Ethical consideration:

The research protocol was submitted to the ethical review board of Saic College of Medical Science and Technology (SCMST). The proposed research protocol continued aims and objectives of the study, details planning and methodology of the research. The ethical review board went thoroughly the protocol. The researcher also presented the protocol in front of the teachers of the department of physiotherapy and the members of ethical review board permitted the researcher to carry out the research.

Relevant data of the present study were collected by a pretested structure questionnaire from the professional bike riders in Dhaka city. No invasive technique was applied to collect data for the present study. So participants were free from physically harm. The name, address and personal information was kept confidential by the investigator.

CHAPTER-IV RESULT

The purpose of this study was to determine the prevalence of wrist pain among the professional bike riders in Dhaka city. Data were numerically coded and analyzed the data by using SPSS 25.0 version software program and the result captured in Microsoft Excel and calculated as percentage and presented by using tables and graphs.

4.1. Socio-demographic information

Table no 1. Frequency distribution of the participants by age.

Age group in years	Frequency	
	N	%
20 - 24	6	5.4
25 - 29	33	29.7
30 - 34	26	23.4
35 - 39	26	23.4
40 - 44	13	11.7
45 - 49	4	3.6
50 - 55	3	2.7
Total	111	100

Mean = 33.39 SD = 6.873

Regarding frequency distribution of the participants by age, 33(29.7%) participants belonged to the age group of 25 – 29 years. It was also found that, 26(23.4%) participants were in the age group of 30 – 34 years. Equal number participants 26(23.4%) were in the age group of 35 – 39 years. The mean age of the motor bike riders was 33.39 years and SD was 6. 873 (Table no 1).

Table no. 2: Frequency distribution of the participants by BMI.

BMI group	Frequency	
	N	%
Under weight (<18.50)	7	6.3
Normal (18.50 – 24.99)	78	70.3
Over weight (>25)	26	23.4
Total	111	100

Mean = 23.219 SD =3.042

About BMI of the participants, it was found that 78(70.3%) participants had normal weight (18.50 – 24.99). The further showed that 26(23.4%) participants had over weight (>25) and 7(6.3%) participants were under weight (<18.50). The mean BMI of the participants was 23. 219 and SD was 3.042 (Table no 2).

Table no. 3: Frequency distribution of the participants by educational status.

Educational Status	Frequency	
	N	%
SSC and below	42	37.8%
HSC	32	28.8%
Graduate	26	23.4%
Post graduate	11	9.9%
Total	111	100

The study showed that, educational level of 42(37.8%) participants was SSC and below, 32(28.85) participants passed HSC and 26(23.4%) participants were Graduate and 11(9.9%) participants was Post graduate (Table no. 3).

Table no. 4: Frequency distribution of the participants by marital status.

Marital Status	Frequency	
	N	%
Married	94	84.7
Unmarried	17	15.3%
Total	111	100

The study showed that, 94 (84.7%) participants were married and 17 (15.3%) participants were unmarried (Table no. 4).

Table no. 5: Frequency distribution of the participants by religion.

Religion Status	Frequency	
	N	**%**
Muslim	99	89.2
Hindu	8	7.2
Buddhist	4	3.6
Total	111	100

About religion of the participants, it was found that 99 (89.2%) participants were Muslim, 8 (7.2%) participants were Hindu and 4 (3.6%) participants were Buddhist (Table no. 5).

Table no. 6: Frequency distribution of the participants by smoking habit.

Smoking habit	Frequency	
	N	%
Yes	74	66.7
No	37	33.3
Total	111	100

The study showed that 74 (66.7%) participants were smokers and 37 (33.3%) participants were non-smokers (Table no. 6).

4. 2. Work Related factors:

Table no. 7: Frequency distribution of the participants by average riding hour (per day).

Average riding hour	Frequency	
	N	%
<4 hour	17	15.3
5 – 6 hour	30	27.0
>6 hour	64	57.7
Total	111	100

The study revealed that, average riding hour 64 (57.7%) participants was >6 hours, 30 (27.0%) participants was 5 – 6 hours and 17 (15.3%) participants was <4 hours (Table no. 7).

Table no. 8: Frequency distribution of the participants by length of driving bike.

Length of driving bike	Frequency	
	N	**%**
>6 month	13	11.7
1year	9	8.1
>1 year	89	80.2
Total	111	100

It was found that, the length of bike driving of 89 (80.2%) participants was >1 year, it was also found that 9 (11.7%) participants were driving 1 year (Table no. 8).

Table no. 9: Frequency distribution of the participants by monthly income.

Monthly income	Frequency	
	N	%
<20000/-	40	36.0
21000 – 30000/-	61	55.0
>30000/-	10	9.0
Total	111	100

About monthly income of the participants, it was found that, 61 (55.0%) participants had Taka 21000 – 30,000. It was also founded that 40 (36.0%) participants monthly income was Taka less than 20,000 (Table no.9).

Table no. 10: Frequency distribution of the participants by comfortable hand grip for bikers.

Comfortable hand grip for bikers	Frequency	
	N	%
Yes	76	68.5
No	35	31.5
Total	111	100

The study showed that 76 (68.5%) participants felt very comfortable with hand grip and 35 (31.5%) bikers did not felt comfortable (Table no. 10).

Table no. 11: Frequency distribution of the participants by fitness of the bike to the body.

Fitness of the bike to the body	Frequency	
	N	%
Yes	97	87.4
No	14	12.6
Total	111	100

The study revealed that, 97 (87.4%) participants was fitness of the bike to the body and 14 (12.6%) participants was not fits to the body (Table no. 11).

Table no. 12: Frequency distribution of the participants by use of gloves.

Use of gloves	Frequency	
	N	%
Yes	65	58.6
No	46	41.4
Total	111	100

The study showed that, 65 (58.6%) motor bike riders were using gloves and 46 (41.4%) participants did not use gloves (Table no. 12).

Table no. 13: Frequency distribution of the participants by wrist pain.

Wrist Pain	Frequency	
	N	%
Yes	71	64
No	40	36
Total	111	100

The study revealed that, 71 (64.0%) participants had wrist pain and 40 (36.0%) participants had no wrist pain (Table no. 13).

4.3. PRWHE Scale related Information:

Title: Pain at rest.

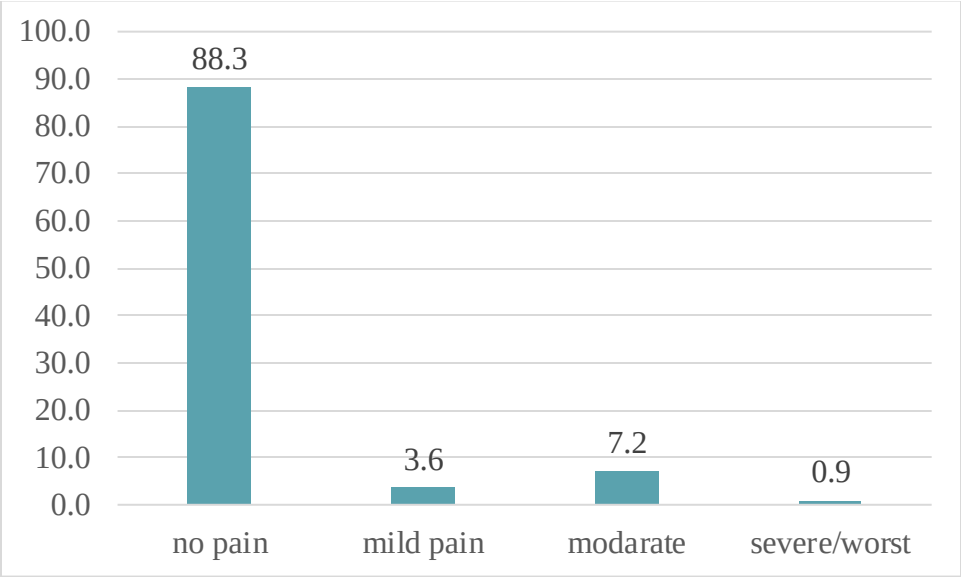


Figure no. 1: Pain at rest of the participants

The study showed that, 98 (88.3%) participants had no pain at rest, 4(3.6%) participants had mild pain, 8(7.2%) participants had moderate pain and 1(0.9%) had severe pain (Figure no. 1).

Title: Repeated wrist movement-

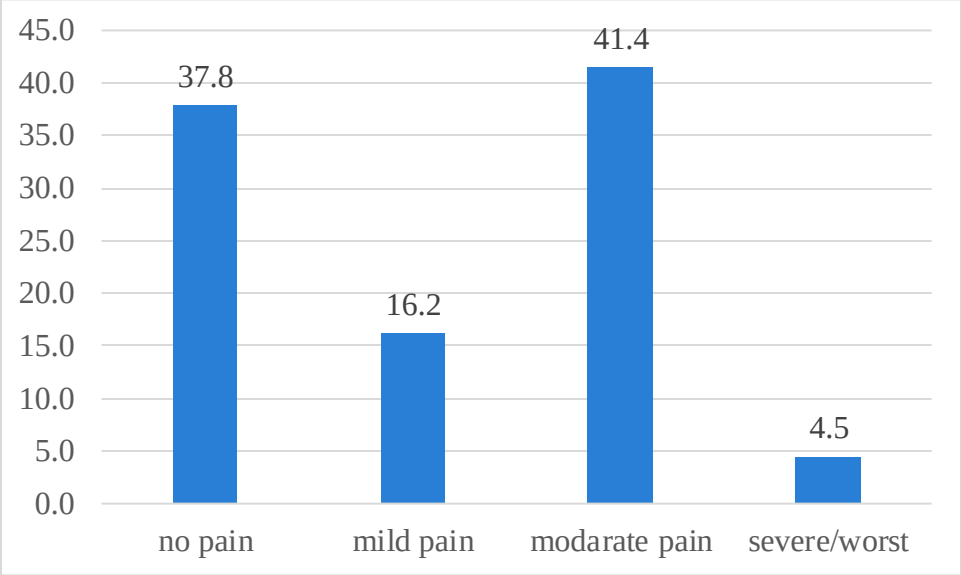


Figure no. 2: Pain at repeated wrist movement of the participants

The study showed that, 42 (37.8%) participants had no pain on repeated wrist movement, 18(16.2%) participants had mild pain, 46(41.4%) participants had moderate pain and 5(4.5%) had severe pain (Figure no. 13).

Title: Lifting heavy weight.

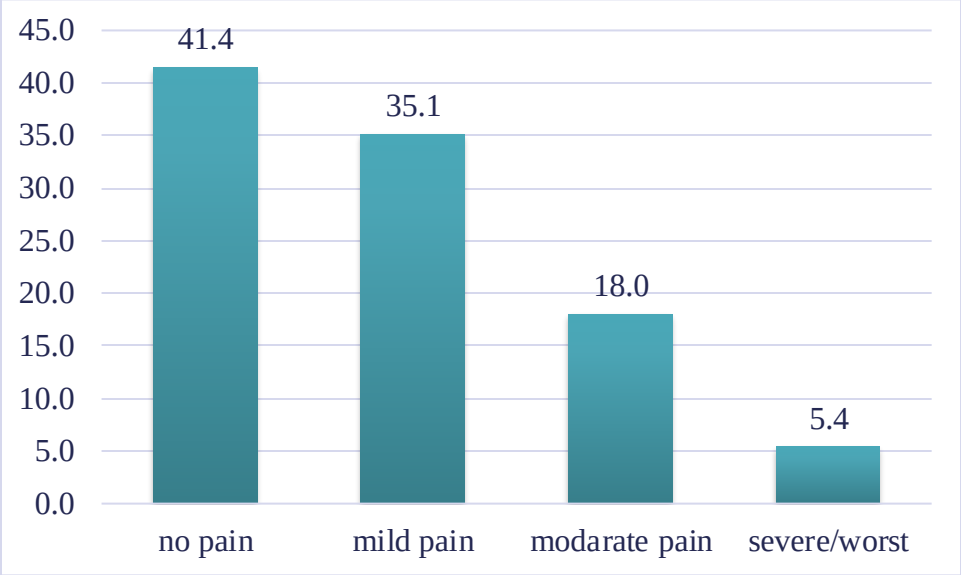


Figure no. 3: Pain during heavy weight lifting of the participants

The study revealed that 46 (41.4%) participants had no pain when lifting heavy weight, 39(35.1%) participants had mild pain, 20(18%) participants had moderate pain and 6(5.5%) had severe pain (Figure no. 3).

Title: Pain at worst condition

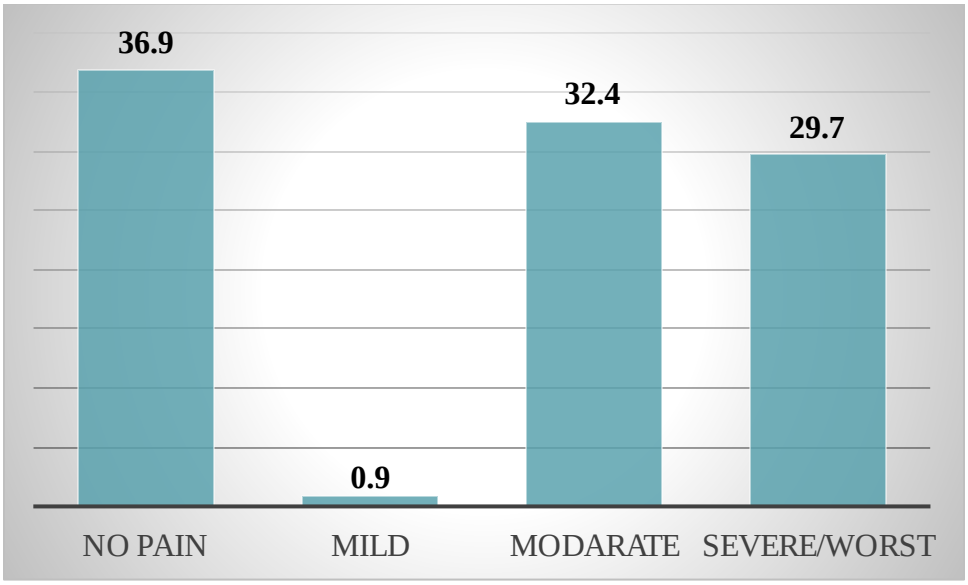


Figure no. 4: Pain at worst condition of the participants

The study showed that, 41 (36.9%) participants did not complain about worst pain, 1(0.9%) participants had mild worst pain, 36(32.4%) participants had moderate worst pain and 33(29.7%) had severe worst pain (Figure no. 4).

Title: Frequent pain of the participants

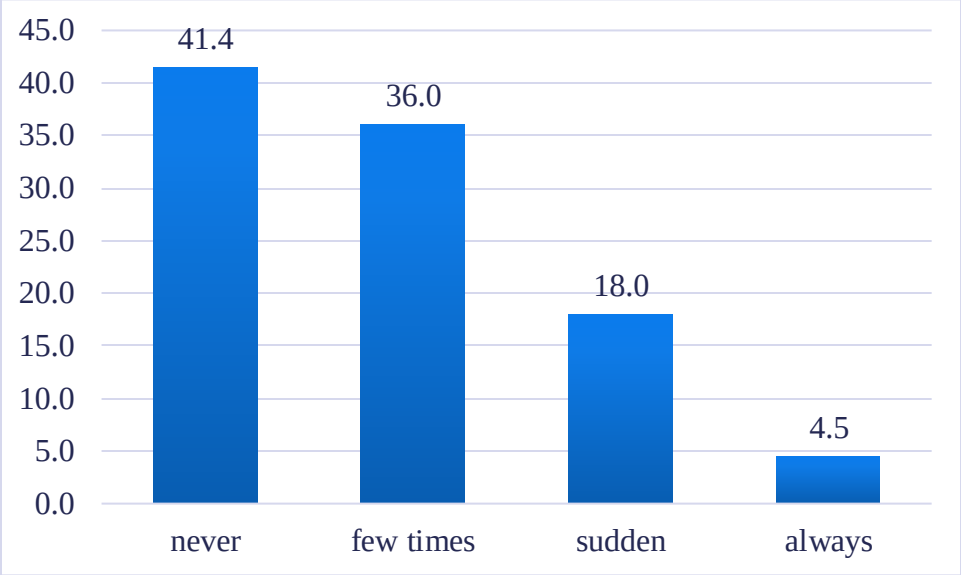


Figure-5: Frequent pain of the participants

The study revealed that, 46 (41.4%) participants had no frequent pain, 40(36%) participants had few times frequent pain, 20(18%) participants had sudden pain and 5(4.5%) had always frequent pain (Figure no. 5).

Table no. 14: Frequency distribution of the participants by difficulty to fasten buttons on shirt

Difficulty to fasten buttons	Frequency	
	N	%
No difficult	108	97.3
Little difficult	3	2.7
Fairly difficult	0	0
Unable	0	0
Total	111	100

About difficult to fasten buttons on shirt, it was found that, 108 (97.3%) participants had no difficulty and 3 (2.7%) participants had little difficulty (Table no. 14).

Table no. 15: Frequency distribution of the participants by difficult to cut meat.

Difficult to cut meat	Frequency	
	N	%
No difficult	97	87.4
Little difficult	8	7.2
Fairly difficult	6	5.4
Unable	0	0
Total	111	100

The study showed that, 97 (87.4%) participants had no difficult to cut meat, 8(7.2%) participants had little difficult, 6(5.4%) participants had fairly difficult and 0(0%) participants had unable (Table no. 15).

Table no. 16: Frequency distribution of the participants by difficult to turn knob.

Difficult to turn knob	Frequency	
	N	%
No difficult	81	73
Little difficult	28	25.2
Fairly difficult	2	1.8
Unable	0	0
Total	111	100

The study revealed that, 81 (73%) participants had no difficult to turn knob, 28(25.2%) participants had little difficult, 2(1.8%) participants had fairly difficult and 0(0%) participants had unable (Table no. 16).

Table no. 17: Frequency distribution of the participants by Push up with affected hand.

Push up with affected hand	Frequency	
	N	%
No difficult	94	87.7
Little difficult	16	14.4
Fairly difficult	1	0.9
Unable	0	0
Total	111	100

The study showed that, 94 (87.7%) participants had no difficult to push up a chair with affected hand, 16 (14.4%) participants had little difficult, 1 (0.9%) participants had fairly difficult and 0 (0%) participants had unable (Table no. 17).

Table no. 18: Frequency distribution of the participants by carry heavy object with affected hand.

Carry heavy object with affected hand	Frequency	
	N	%
No difficult	51	45.9
Little difficult	43	38.7
Fairly difficult	14	12.6
Unable	3	2.7
Total	111	100

About carry heavy object with affected hand, it was found that, 51 (45.9%) participants had no difficulty, 43 (38.7%) participants had little difficulty, 14 (12.6%) participants had fairly difficulty and 3 (2.7%) participants had unable (Table no. 18).

Table no. 19: Frequency distribution of the participants by use bathroom tissue with affected hand.

Use bathroom tissue with affected hand	Frequency	
	N	**%**
No difficult	106	95.5
Little difficult	4	3.6
Fairly difficult	1	0.9
Unable	0	0
Total	111	100

The study revealed that, 106 (95.5%) participants had no difficult to Use bathroom tissue with affected hand, 4(3.6%) participants had little difficult, 1(0.9%) participants had fairly difficult and 0(0%) participants had unable (Table no. 19).

Table no. 20: Frequency distribution of the participants by personal activities.

Personal activities	Frequency	
	N	**%**
No difficult	68	61.3
Little difficult	33	29.7
Fairly difficult	9	8.1
Unable	1	0.9%
Total	111	100

The study showed that, 68 (61.3%) participants had no difficult to personal activities, 33(29.7%) participants had little difficult, 9(8.1%) participants had fairly difficult and 1(0.9%) participants had unable (Table no. 20).

Table no. 21: Frequency distribution of the participants by household work.

Household work	Frequency	
	N	**%**
No difficult	70	63.1
Little difficult	33	29.7
Fairly difficult	7	6.3
Unable	1	0.9%
Total	111	100

About household work, it was found that, 70 (63.1%) participants had no difficult, 33 (29.7%) participants had little difficult, 7 (6.3%) participants had fairly difficult and 1(0.9%) participants had unable (Table no. 21).

Table no. 22: Frequency distribution of the participants by work (job/other work).

Work(job/other activity)	Frequency	
	N	**%**
No difficult	73	65.8
Little difficult	33	29.7
Fairly difficult	4	3.6
Unable	1	0.9%
Total	111	100

The study revealed that, 73 (65.8%) participants had no difficult to work (job/other), 33 (29.7%) participants had little difficult, 4 (3.6%) participants had fairly difficult and 1(0.9%) participants had unable (Table no. 22).

Table no. 23: Frequency distribution of the participants by recreational activities.

Recreational activities	Frequency	
	N	%
No difficult	89	80.2
Little difficult	20	18.0
Fairly difficult	2	1.8
Unable	0	0
Total	111	100

The study showed that, 89 (80.2%) participants had no difficult to recreational activities, 20 (18.2%) participants had little difficult, 2 (1.8%) participants had fairly difficult and 0 (0%) participants had unable (Table no. 23).

4.4 Wrist pain related information Based on PRWHE Scale:

Table no. 24: Frequency distribution of the participants by level of pain.

Level of pain	Frequency	
	N	%
Mild(<1)	41	36.9
Moderate(1 – 21)	54	48.6
Severe(>21)	16	14.4
Total	111	100

Mean = 11.1261 SD =9.95911

About level of the pain, it was found that, 41 (36.9%) participants had mild (<1) pain, 54 (48.6%) participants had moderate (1 – 21) pain and 16 (14.4%) participants had severe (>21) pain. The mean level of pain of motor bike riders was 11.1261 and SD was 9.95911 (Table no. 24).

Table no. 25: Frequency distribution of the participants by functional ability.

Level of Function	Frequency	
	N	%
Mild(<1)	57	51.4
Moderate(1 – 21)	34	30.6
Severe(>21)	20	18.0
Total	111	100

Mean = 3.0090 SD = 4.16096

Regarding frequency distribution of the participants by level of function, 57 (51.4%) participants had mild (<1) pain. It was also found that, 34 (30.6%) participants were moderate (1 – 21) pain and 20 (18.0%) participants were severe (>21) pain. The mean of functional level was 3.0090 and SD was 4.16096 (Table no. 25).

Table no. 26: Frequency distribution of the participants by physical condition of the patients.

Level of total score	Frequency	
	N	%
Mild(<1)	41	36.9
Moderate(1 – 21)	49	41.1
Severe(>21)	21	18.9
Total	111	100

The study showed that, 41 (36.9%) participants had mild (<1) pain, 49 (41.1%) participants had moderate (1 – 21) pain and 21 (18.9%) participants had severe (>21) pain. The mean level of total score of motor bike riders was 14.1351 and SD was 13.36701 (Table no. 26).

4. 5. Association

Table no. 27: Frequency distribution of the participants by age and wrist pain.

Age group in years	Wrist pain		Total	
	Yes	No	N	%
20-24	4 (66.7%)	2 (36.3%)	6	5.4%
25-29	23 (64.7%)	10 (30.3%)	33	29.7%
30-34	12 (46.2%)	14 (53.8%)	26	23.4%
35-39	16 (61.5%)	10 (38.5%)	26	23.4%
40-44	11 (84.6%)	2 (15.4%)	13	11.7%
45-49	2 (50.0%)	2 (50.0%)	4	3.6%
50-55	3 (100.0%)	0 (0%)	3	2.7%
Total	71	40	111	100

$x^2 = 8.568$, $df = 6$, $P = 0.197$

About frequency distribution of the participants by age and wrist pain, it was found that, 33 participants belonged to the age group of 25 – 29 years. Among them 23 (64.7%) participants had wrist pain. It also found that 26 participants were in the age group of 30 – 34 years. Among them 12 (46.2%) participants had wrist pain. In case of 35 – 39 years, 16 (61.5%) participants had wrist pain. The association between age and wrist pain was found statistically not significant ($x^2 = 8.568$, $df = 6$, $P = 0.197$) [Table no. 27].

Table no. 28: Frequency distribution of the participants by BMI and wrist pain.

BMI group	Wrist pain		Total	
	Yes	No	N	%
Under weight (<18.50)	4 (51.1%)	3 (42.9%)	7	6.3%
Normal (18.50-24.99)	48 (61.5%)	30 (38.5%)	78	70.3%
Over weight (>25)	19 (73.1%)	7 (26.9%)	26	23.4%
Total	71	40	111	100%

$x^2 = 1.277$, $df = 2$, $P = 0.528$

About frequency distribution of the participants by BMI and wrist pain, it was found that, 78 participants had normal weight (18.50-24.99). Among them 48 (61.5%) participants had wrist pain. It also found that 26 participants were in over weight (>25). Among them 19 (73.1%) participants had wrist pain. In case of (>18.50) under-weight. 4 (51.1%) participants had wrist pain. The association between BMI and wrist pain was found statistically not significant ($x^2 = 1.277$, $df = 2$, $P = 0.528$) [Table no. 28].

Table no. 29: Frequency distribution of the participants by bike fit the body and wrist pain.

Fitness of the bike	Wrist pain		Total	
	Yes	No	N	%
Bike fit to the body	59 (60.8%)	38 (39.2%)	97	87.4%
Bike did not fit to the body	12 (85.7%)	2 (14.3%)	14	12.6%
Total	71	40	111	100

$x^2 = 0.070$, $df = 1$, $P = 3.288$

About frequency distribution of the participants by fitness of the bike and wrist pain, it was found that, 97 participants had bike fit of the body. Among them 59 (60.8%) participants had wrist pain. It also found that 14 participants were bike did not fit to the body. Among them 12 (85.7%) participants had wrist pain. The association between fitness of the bike and wrist pain was found statistically nearly significant ($x^2 = 0.070$, $df = 1$, $P = 3.288$) [Table no. 29].

Table no. 30: Frequency distribution of the participants by average riding hour and wrist pain.

Average riding hour	Wrist pain		Total	
	Yes	No	N	%
<4 hour	6 (35.3%)	11 (64.7%)	17	15.3%
5 – 6 hour	21 (70.0%)	9 (30.0%)	30	27.0%
>6 hour	44 (68.8%)	20 (31.3%)	64	57.7%
Total	71	40	111	100%

$x^2 = 0.028$, $df = 2$, $P = 7.172$

About frequency distribution of the participants by average riding hour and wrist pain, it was found that, 64 participants had average riding time >6 hour. Among them 44 (68.8%) participants had wrist pain. It also found that 30 participants were average riding time 5 – 6 hour. Among them 21 (70.0%) participants had wrist pain. The association between average riding hour and wrist pain was found statistically strongly significant ($x^2 = 0.028$, $df = 2$, $P = 7.172$) [Table no. 30].

Table no. 31: Frequency distribution of the participants by length of driving bike and wrist pain.

length of driving bike	Wrist pain		Total	
	Yes	No	N	%
<6 month	6 (46.2%)	7 (53.8%)	13	11.7%
1 year	4 (44.4%)	5 (55.6%)	9	8.1%
>1 year	61 (68.5%)	28 (31.5%)	89	80.2%
Total	71	40	111	100%

$x^2 = 0.130$, $df = 2$, $P = 4.085$

About frequency distribution of the participants by length of driving bike and wrist pain, it was found that, 89 participants had length of driving bike >1year. Among them 61(68.5%) participants had wrist pain. It also found that 13 participants were length of driving bike 1 year. Among them 4 (44.4%) participants had wrist pain. The association between length of driving bike and wrist pain was found statistically not significant ($x^2 = 0.130$, $df = 2$, $P = 4.085$) [Table no. 31].

CHAPTER-V DISCUSSION

The present study was done in Dhaka City. The study population was the male Professional Bikers aged 20-55 years. The objectives of the study was to find out the prevalence of wrist pain among the professional bike riders in Dhaka city. Among the male Professional Bikers a total of 111 respondents were interviewed with a structured questionnaire as per objectives. The discussion showed given below.

About frequency distribution of the participants by age, 29.7% participants belonged to the age group of 25 – 29 years. It was also found that, 23.4% participants were in the age group of 30 – 34 years. The mean age and SD was 33.39 years and 6. 873 respectively (Table no 1). In other study showed that, a total of 528 people have participated in this survey. Finally, the age range of the participants was 18-61 years old (mean age=24.63 years, SD=7.17 years) (Deepan, et al., 2018).

The study showed that, 111 bikers were involved, there were 100% participants was male. There were no female participants. In other study conduct that, 57,501 participant, 64.8% were female and 35.2% were male participant (chen, et al., 2022). Qualitative results of this research were presented in the form of frequency tables out of 227 participants 49.5% were female and 51.5% were male (Fatima, S.N. et al., 2022).

About BMI of the participants, it was found that 70.3% participants had normal weight (18.50 – 24.99). The further showed that 23.4% participants had over weight (>25) and 6.3% participants were under weight (<18.50). The mean BMI of the participants was 23. 219 and SD was 3.042 (Table no 2). In other study found that Body mass index where Mean ±SD = 21.07 ± 3.31 (Amjad, F, et al., 2020).

The study showed that, educational level of 37.8% participants was SSC and below, 28.85 participants passed HSC and 23.4% participants were Graduate and 9.9% participants was Post graduate (Table no. 3).

In other study found that, 26.7% participants was junior school/below, 38.1% participants was high school and technical secondary school, 20.9% participants was junior college and 14.3% were bachelor and master degree or above (chen, et al., 2022).

The study revealed that, 84.7% participants were married and 15.3% participants were unmarried (Table no. 4). Chen, et al. conduct that, 36.5% were Spinsterhood, 61.5% Married and 2% Married but living alone.

About religion of the participants, it was found that, 89.2% participants were Muslim, 7.2% participants were Hindu and 3.6% participants were Buddhist (Table no. 5).

The study showed that, 66.7% participants were smokers and 33.3% participants were non-smokers (Table no. 6). In other study found that, 17.6% participants were smoking habit Occasionally, 17.2% participants were Frequently and 1.7% participants were Rimonabant (chen, et al., 2022).

The study revealed that, average riding hour 57.7% participants was >6 hours, 27.0% participants was 5-6 hours and 15.3% participants was <4 hours (Table no. 7).

It was found that, the length of bike driving of 80.2% participants was >1 year, it was also found that, 11.7% participants were driving 1 year (Table no. 8).

About monthly income of the participants, it was found that, 55.0% participants had Taka 21000 – 30,000. It was also founded that, 36.0% participants monthly income was Taka less than 20,000 (Table no. 9).

In other study found that, 19.5% participants monthly income >3000 rbm, 49.3% participants monthly income 3,001–5,000 rmb and 31.1% participants monthly income were >5,000 rmb (chen, et al., 2022).

The study showed that, 68.5% participants felt very comfortable with hand grip and 31.5% bikers did not felt comfortable (Table no. 10).

The study revealed that, 87.4% participants was fitness of the bike to the body and 12.6% participants was not fits to the body (Table no. 11).

The study showed that, 58.6% motor bike riders were using gloves and 41.4% participants did not use gloves (Table no. 12).

The study revealed that, 64.0% participants had wrist pain and 36.0% participants had no wrist pain (Table no. 13). In other study found that, 21% participants had wrist pain and 89% of participants had not wrist pain (Dutta, K., Basu, B. and Sen, D., 2014).

About level of the pain, it was found that, 36.9% participants had mild (<1) pain, 48.6% participants had moderate (1 – 21) pain and 14.4% participants had severe (>21) pain. The mean level of pain of motor bike riders was 11.1261 and SD was 9.95911 (Table no. 24). In other study found that, PRWHE (pain score out of 50) Mean ±SD = 7.89±8.78 (Baabdullah, A. et al., 2020).

Regarding frequency distribution of the participants by level of function, 51.4% participants had mild (<1) pain. It was also found that, 30.6% participants were moderate (1 – 21) pain and 18.0% participants were severe (>21) pain. The mean of functional level was 3.0090 and SD was 4.16096 (Table no. 25). In other study showed that, PRWHE (functional score out of 50) Mean ±SD=7.56±12.778 (Baabdullah, A. et al., 2020).

The study showed that, 36.9% participants had mild (<1) pain, 41.1% participants had moderate (1 – 21) pain and 18.9% participants had severe (>21) pain. The mean level of physical condition of the motor bike riders was 14.1351 and SD was 13.36701 (Table no. 26). In other study found that, PRWHE (total score out of 100) Mean ±SD = 11.67±14 78 (Baabdullah, A. et al., 2020).

About frequency distribution of the participants by age and wrist pain, it was found that, 33 participants belonged to the age group of 25 – 29 years. Among them 64.7% participants had wrist pain. It also found that 26 participants were in the age group of 30 – 34 years. Among them 46.2% participants had wrist pain. In case of 35 – 39 years, 61.5% participants had wrist pain. The association between age and wrist pain was found statistically not significant (X^2 = 8.568, df =6, P = 0.197) [Table no. 27].

About frequency distribution of the participants by BMI and wrist pain, it was found that, 78 participants had normal weight (18.50-24.99). Among them 61.5% participants had wrist pain. It also found that 26 participants were in over weight (>25). Among them 73.1% participants had wrist pain. In case of (>18.50) under-weight. 51.1% participants had wrist pain. The association between BMI and wrist pain was found statistically not significant (X^2 = 1.277, df =2, P = 0.528) [Table no. 28].

About frequency distribution of the participants by fitness of the bike and wrist pain, it was found that, 97 participants had bike fit of the body. Among them 60.8% participants had wrist pain. It also found that 14 participants were bike did not fit to the body. Among them 85.7% participants had wrist pain. The association between fitness of the bike and wrist pain was found statistically nearly significant (X^2 = 0.070, df =1, P = 3.288) [Table no. 29].

About frequency distribution of the participants by average riding hour and wrist pain, it was found that, 64 participants had average riding time >6 hour. Among them 68.8% participants had wrist pain. It also found that 30 participants were average riding time 5 – 6 hour. Among them 70.0% participants had wrist pain. The association between average riding hour and wrist pain was found statistically strongly significant (X^2 = 0.028, df =2, P = 7.172) [Table no. 30].

About frequency distribution of the participants by length of driving bike and wrist pain, it was found that, 89 participants had length of driving bike >1year. Among them 68.5% participants had wrist pain. It also found that 13 participants were length of driving bike 1 year. Among them 44.4% participants had wrist pain. The association between length of driving bike and wrist pain was found statistically not significant (X^2 = 0.130, df =2, P = 4.085) [Table no. 31].

CHAPTER-VI LIMITATIONS

1. In this study, sample size was 206 and data were collected from 111 participants due to shortage of time so generalizability could not be achieved in the study.
2. Convenience sampling technique was applied to select the participants. This technique is non-probability sampling technique.
3. If a rider suddenly get any message and notification from any passengers, they immediately leave the session without answering the full questionnaire.
4. Some respondents showed that lack of co-operation and avoid answering some of the questions.
5. The researcher is a student of the 4th year. This dissertation is first research work. This research work bears the evidence of educate experience of the researcher.

CHAPTER- VII CONCLUSION AND RECOMMENDATION

7.1 Conclusion:

Bangladesh had the highest Asian rate of motorcycle deaths at 28.4 per 10,000 motorcycles. Biking is a major cause of traumatic injuries, especially hand and wrist wounds. Bikers are significantly more likely to sustain an over use injury. Due to the excessive physical effort required for riding, there is a danger for overuse issues.
Wrist pain is very frequently occurring phenomenon in Bangladesh and all over the world. Wrist pain has great causing severe long term physical disability and give rise to huge costs for the society.

It was a descriptive type of cross sectional study among the professional bike riders in Dhaka city. Data were collected from different road side in Dhaka city. The study duration was 1 years from June 2022 – July 2023. This study sample size was 206 but I was collected dada 111. Data method was face to face formal interview. Inclusion criteria was professional bike riders, age above 18 year and below 60 years and those above 6 month who are riding bike. PRWHE scale used for wrist pain of bikers. Descriptive analysis was done by SPSS-25 version program according to the objectives of the study. It includes percentage, mean, median, standard deviation, frequency. Association between age and wrist pain, BMI and wrist pain, bike fit to the body and wrist pain, use gloves and wrist pain and average riding hour and wrist pain, examined by chi-square test.

About frequency distribution of the participants by age, 29.7% participants belonged to the age group of 25 – 29 years. The mean age and SD was 33.39 years and 6. 873 and all the participants were male in the study.

About BMI of the participants, it was found that 70.3% participants had normal weight (18.50 – 24.99). The mean BMI of the participants was 23. 219 and SD was 3.042.

The study showed that, educational level of 37.8% participants was SSC and below. It also found that, 84.7% participants were married, 89.2% participants were Muslim, 66.7% participants were smokers, average riding hour 57.7% participants was >6 hours, length of bike driving of 80.2% participants was >1 year, 55.0% participants had 21000 – 30,000 Taka, 68.5% participants felt very comfortable with hand grip,

The study revealed that, 87.4% participants was fitness of the bike to the body, 58.6% motor bike riders were using gloves.

About level of the pain, it was found that, 36.9% participants had mild (<1) pain, 48.6% participants had moderate (1 – 21) pain and 14.4% participants had severe (>21) pain. The mean level of pain of motor bike riders was 11.1261 and SD was 9.95911.

Regarding frequency distribution of the participants by level of function, 51.4% participants had mild (<1) pain. It was also found that, 30.6% participants were moderate (1 – 21) pain and 18.0% participants were severe (>21) pain. The mean of functional level was 3.0090 and SD was 4.16096.

The study showed that, 36.9% participants had mild (<1) pain, 41.1% participants had moderate (1 – 21) pain and 18.9% participants had severe (>21) pain. The mean level of physical condition of the motor bike riders was 14.1351 and SD was 13.36701.

The association between age and wrist pain was found statistically not significant (X^2 = 8.568, df =6, P = 0.197), fitness of the bike and wrist pain was found statistically nearly significant (X^2 = 0.070, df =1, P = 3.288) and average riding hour and wrist pain was found statistically strongly significant (X^2 = 0.028, df =2, P = 7.172). The study showed that, Injuries to the wrist and hands were frequently accompanied with discomfort, ongoing disability, decreased productivity, and a decline in quality of life. The study revealed that, 64% of participants had wrist pain of the bike riders.

7.2. Recommendation:

The aims of study were to determine the prevalence of wrist pain among the professional bike riders in Dhaka city. Population of the study had some limitations but investigator identified some further step that might be taken for the better accomplishment of further research. The main recommendation would be as follows:

- A well designed research should be carried out to get real picture of the situation of bike riders.
- It was revealed in this study 64% participants had wrist pain. They need to rest and physiotherapy.
- Cannot ride a motorcycle for a long time in a day.
- Safety equipment must be used while riding a motorcycle.
- It also recommended that, in future studies:
- Different measurement tools need to be included such as Woodstock Rehab and Fitness Elbow/Hand/ Wrist Disability index, Wrist Hand Disability Index (WHDI).
- Similar studies with large sample size.

Reference

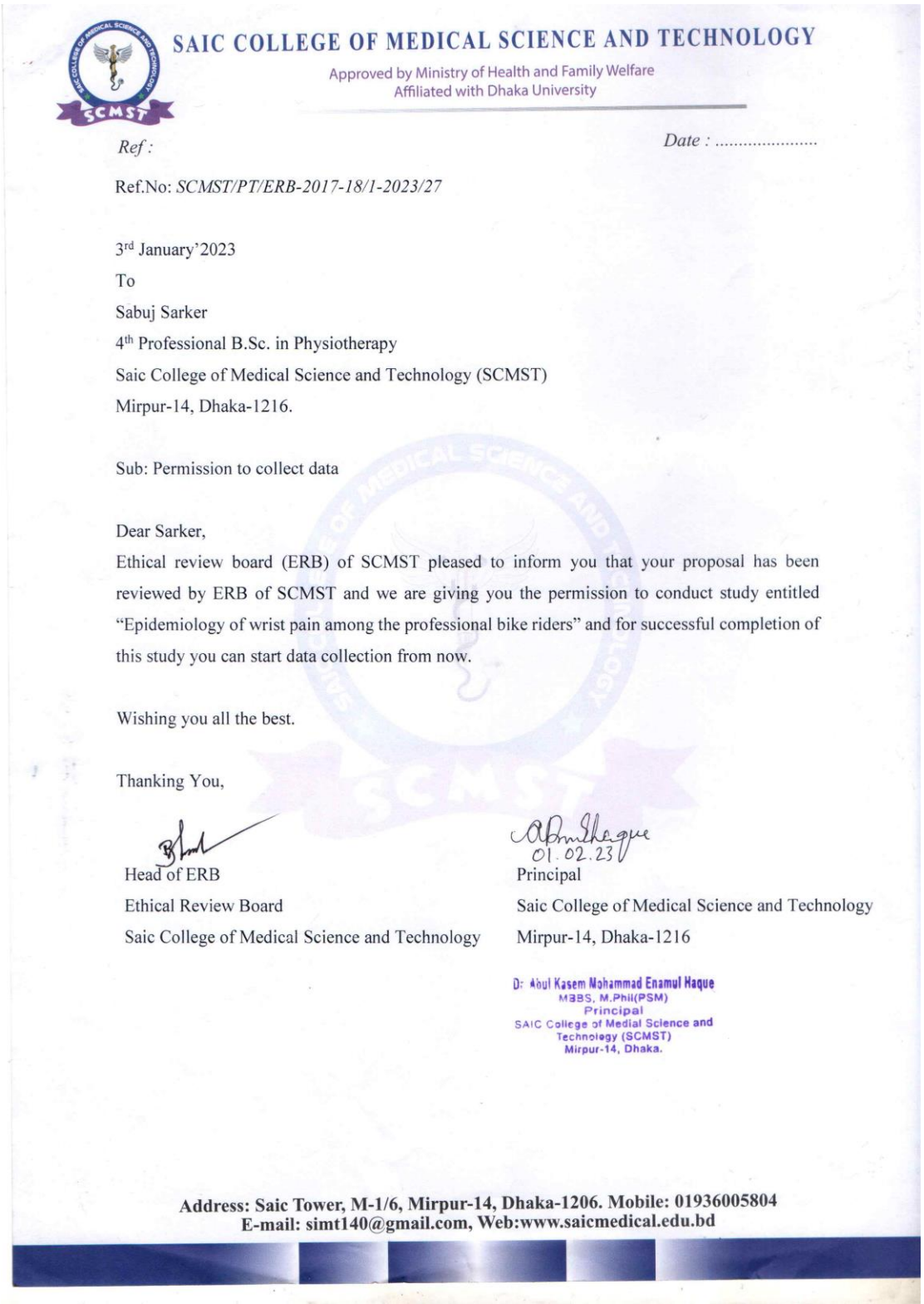
1. Ali, F., Khan, S.Z., Ullah, N., Khaliq, A. And Haq, Z.U., 2018. November. Hand Injuries And Its Associated Factors: A Cross-Sectional Study Among Industrial Workers At Hayatabad, Peshawar. In Injury Prevention (Vol. 24, Pp. A208-A208). British Med Assoc House, Tavistock Square, London Wc1h 9jr, England: *Bmj Publishing Group*.
2. Avery, D.M., Rodner, C.M., Edgar, C.M., 2016. Sports-related wrist and hand injuries: a review. *Journal of Orthopedic Surgery and Research*; 11:99. DOI 10.1186/s13018-016-0432-8.
3. Amjad, F., Farooq, M.N., Batool, R. and Irshad, A., 2020. Frequency of wrist pain and its associated risk factors in students using mobile phones. *Pakistan Journal of Medical Sciences*, *36*(4), p.746.
4. Arroyo-Berezowsky, C. and Quinzaños-Fresnedo, J., 2021. Epidemiology of hand and wrist injuries treated in a reference specialty center over a year. *Acta ortopédica mexicana*, *35*(5), pp.429-435.
5. Brink, P.R., Franssen, B.B. and Disseldorp, D.J., 2015. A simple blind tenolysis for flexor carpi radialis tendinopathy. *Hand*, *10*(2), pp.323-327.
6. Baabdullah, A., Bokhary, D., Kabli, Y., Saggaf, O., Daiwali, M. and Hamdi, A., 2020. The association between smartphone addiction and thumb/wrist pain: A cross-sectional study. *Medicine*, *99*(10).
7. Berezowsky, C.A., and Fresnedo, Q.J. 2021). Epidemiology of hand and wrist injuries treated in a reference specialty center over a year. *Acta Ortopedica Mexicana*; 35(5):429-435.
8. Bushnell, B.D., Draeger, R.W., Crosby, C.G. and Bynum, D.K., 2008. Management of intra-articular metacarpal base fractures of the second through fifth metacarpals. *The Journal of hand surgery*, *33*(4), pp.573-583.
9. Campbell, D., Campbell, R., O'Connor, P. and Hawkes, R., 2013. Sports-related extensor carpi ulnaris pathology: a review of functional anatomy, sports injury and management. *British journal of sports medicine*, *47*(17), pp.1105-1111.
10. Cotterell, I.H. and Richard, M.J., 2015. Metacarpal and phalangeal fractures in athletes. *Clinics in sports medicine*, *34*(1), pp.69-98.

11. Chauhan, A., Jacobs, B., Andoga, A. and Baratz, M.E., 2014. Extensor tendon injuries in athletes. *Sports Medicine and Arthroscopy Review*, *22*(1), pp.45-55.
12. Coggon, D., Ntani, G., Walker-Bone, K., Felli, V.E., Harari, F., Barrero, L.H., Felknor, S.A., Rojas, M., Cattrell, A., Serra, C. and Borchini, R., 2019. Determinants of international variation in the prevalence of disabling wrist and hand pain. *BMC Musculoskeletal Disorders*, *20*(1), pp.1-8.
13. Chen, N., Li, G., Sun, X., Zhang, M., Zhang, H., Ling, R., Liu, Y., Li, G., Ren, Z., Yin, Y. and Shao, H., 2022. Prevalence status and associated factors of wrist postural injury in the Chinese occupational population. *Frontiers in Public Health*, *10*, p.1047814.
14. De Putter, C.E., Selles, R.W., Polinder, S., Panneman, M.J.M., Hovius, S.E.R. and van Beeck, E.F., 2012. Economic impact of hand and wrist injuries: health-care costs and productivity costs in a population-based study. Jbjs, 94(9), p.e56.
15. Deepan, V., Subramanian, M. and Dineshkumar, C., 2018. Motorcycle rider fatigue analyze: results of an online survey. *Int J Mech Product Eng Res Dev (IJMPERD)*, *8*.
16. Dutta, K., Basu, B. and Sen, D., 2014. Identification and quantification of stressors affecting motorized two wheeler riders: an ergonomic attempt. *Int J Res*, *2*(1), pp.13-25.
17. Fatima, S.N., Hanif, A., Noureen, A., Ijaz, F. and Ghafoor, S., 2022. Correlation between work-related musculoskeletal wrist pain and level of disability among health practitioners. *Pakistan Journal of Medical & Health Sciences*, *16*(05), pp.186-186.
18. Geissler, W.B. and Burkett, J.L., 2014. Ligamentous sports injuries of the hand and wrist. *Sports medicine and arthroscopy review*, *22*(1), pp.39-44.
19. Gillani, S., Kanwal, J. and Tariq, M., 2018. Different Patterns Of Limb Injuries In Victims Of Motorbike Accidents. *Theoretical & Applied Science*, (3), pp.155-159.
20. Hoque, M. M., Hossain, M. S., Rahman, M. A., & Islam, S. M. A. B. A., 2014. Safer motorcycling and safer roads: The context of Bangladesh. *Proceeding of South East Asia Road Safety Summit (SEARSS*), Oct 26-28, Bali, Indonesia.

21. Holmbeck, G.N. and Devine, K.A., 2009. An author's checklist for measure development and validation manuscripts. *Journal of pediatric psychology*, *34*(7), pp.691-696.
22. Immerman, I., Livermore, M.S. and Szabo, R.M., 2014. Use of emergency department services for hand, wrist, and forearm fractures in the United States in 2008. *Journal of surgical orthopaedic advances*, *23*(2), pp.98-104.
23. Karabay, N., 2013. US findings in traumatic wrist and hand injuries. *Diagnostic and Interventional Radiology*, *19*(4), p.320.
24. Lebec, M.T., Cook, K. And Baumgartel, D., 2014. Overuse injuries associated with mountain biking: Is single-speed riding a predisposing factor? *Sports*, *2*(1),
25. Lehman, J.D., Krishnan, K.R., Stepan, J.G. and Nwachukwu, B.U., 2020. Prevalence and treatment outcomes of hand and wrist injuries in professional athletes: a systematic review. *HSS Journal®*, *16*(3), pp.280-287.
26. Lund, C.B., Mikkelsen, S., Thygesen, L.C., Hansson, G.Å. and Thomsen, J.F., 2019. Movements of the wrist and the risk of carpal tunnel syndrome: a nationwide cohort study using objective exposure measurements. *Occupational and environmental medicine*, *76*(8), pp.519-526.
27. Melone, C.P., Polatsch, D.B. and Beldner, S., 2009. Disabling hand injuries in boxing: boxer's knuckle and traumatic carpal boss. *Clinics in sports medicine*, *28*(4), pp.609-621.
28. McMurtry, J.T. and Isaacs, J., 2015. Extensor tendons injuries. *Clinics in sports medicine*, *34*(1), pp.167-180.
29. MacDermid, J.C. and Tottenham, V., 2004. Responsiveness of the disability of the arm, shoulder, and hand (DASH) and patient-rated wrist/hand evaluation (PRWHE) in evaluating change after hand therapy. *Journal of Hand Therapy*, *17*(1), pp.18-23.
30. Nguyen, H. H., 2013. A comprehensive review of motorcycle safety situation in Asian countries. *Journal of Society for Transportation and Traffic Studies (JSTS)*, 4(3).

31. Pervaz, s., Rahman, M.M., Rabbi, S.H.E., Uddin, M.I., and Rahman, M.M., 2020. A Review of Motorcycle Safety Situation in Bangladesh. *Proceeding of the International Conference on Civil Engineering for Sustainable Development (ICCESD 2020*), 7-9 February 2020, KUET. Khulna, Bangladesh.
32. Roloff, I., Schöffl, V.R., Vigouroux, L. and Quaine, F., 2006. Biomechanical model for the determination of the forces acting on the finger pulley system. *Journal of biomechanics*, *39*(5), pp.915-923.
33. Rosenbaum, Y.A., and Awan, H.M. 2017. Acute hand injuries in athletes. *The physical and sports medicine*, 4(2); 151-158.
34. Rhee, P.C., Jones Jr, D.B. and Kakar, S., 2012. Management of thumb metacarpophalangeal ulnar collateral ligament injuries. *JBJS*, *94*(21), pp.2005-2012.
35. Rumball, J.S., Lebrun, C.M., Di Ciacca, S.R. and Orlando, K., 2005. Rowing injuries. *Sports medicine*, *35*(6), pp.537-555.
36. Sendher, R. and Ladd, A.L., 2013. The scaphoid. *Orthopedic Clinics*, *44*(1), pp.107-120.
37. SM Rabiul Islam, S., 2017. Acute occupational hand injuries with their social and economic aspects: a hospital based cross sectional study. *Orthoplastic Surgery & Orthopedic Care International Journal*, *1*(1), pp.15-18.
38. Turkington, C., Dempster, M. and Maguire, J., 2018. Adjustment to hand injury: cross- sectional survey exploring adjustment in relation to illness perceptions and coping strategies. *Journal of Hand Therapy*, *31*(4), pp.502-510.
39. Tomaino, M.M., 2000. The importance of the pronated grip x-ray view in evaluating ulnar variance. *The Journal of hand surgery*, *25*(2), pp.352-357.
40. Tang, P., 2011. Collateral ligament injuries of the thumb metacarpophalangeal joint. *JAAOS-Journal of the American Academy of Orthopaedic Surgeons*, *19*(5), pp.287-296.
41. Weiland, A.J., 2012. Boutonniere and pulley rupture in elite baseball players. *Hand Clinics*, *28*(3), p.447.
42. Yun, H., Bae, S.J., Lee, J.I. and Lee, D.H., 2022. Epidemiology, injury characteristics and clinical outcomes of bicycle and motorcycle accidents in the under 20 population: South Korea. *BMC emergency medicine*, *22*(1), pp.1-11.

Appendix -A



SAIC COLLEGE OF MEDICAL SCIENCE AND TECHNOLOGY

Approved by Ministry of Health and Family Welfare
Affiliated with Dhaka University

Ref :

Date : .....

Ref.No: *SCMST/PT/ERB-2017-18/1-2023/27*

3rd January'2023

To

Sabuj Sarker

4th Professional B.Sc. in Physiotherapy

Saic College of Medical Science and Technology (SCMST)

Mirpur-14, Dhaka-1216.

Sub: Permission to collect data

Dear Sarker,

Ethical review board (ERB) of SCMST pleased to inform you that your proposal has been reviewed by ERB of SCMST and we are giving you the permission to conduct study entitled "Epidemiology of wrist pain among the professional bike riders" and for successful completion of this study you can start data collection from now.

Wishing you all the best.

Thanking You,

Head of ERB
Ethical Review Board
Saic College of Medical Science and Technology

01.02.23

Principal
Saic College of Medical Science and Technology
Mirpur-14, Dhaka-1216

Dr. Abul Kasem Mohammad Enamul Haque
MBBS, M.Phil(PSM)
Principal
SAIC College of Medial Science and Technology (SCMST)
Mirpur-14, Dhaka.

Address: Saic Tower, M-1/6, Mirpur-14, Dhaka-1206. Mobile: 01936005804
E-mail: simt140@gmail.com, Web:www.saicmedical.edu.bd

Appendix – B

প্রিয় অংশগ্রহণকারী,

আমি সবুজ সরকার, ঢাকা বিশ্ববিদ্যালয় দ্বারা অনুমোদিত "সাইক কলেজ অফ মেডিকেল সায়েন্স এন্ড টেকনোলজি" (এস সি এম এস টি) ফিজিওথেরাপি বিভাগে ব্যাচেলর অফ ফিজিওথেরাপি প্রোগ্রামের ছাত্র । আমার ব্যাচেলর ডিগ্রীর আংশিক পূর্ণতার জন্য একটি গবেষণা করছি । গবেষণার শিরোনামটি হলো-

ঢাকা শহরের পেশাগত মটর সাইকেল চালকদের মধ্যে কব্জির ব্যথার মহামারী ।"

এখানে সমাজিক জনসংখ্যা সংক্রান্ত তথ্য কাজের সম্পর্কিত তথ্য এবং ব্যথা সম্পর্কিত তথ্য অন্তর্ভূক্ত করে এমন প্রশ্নের একটি তালিকা রয়েছে যা আপনাকে পূরণ করতে হবে। এটি প্রায় ১৮-২৫ মিনিট সময় নেবে সম্পূর্ণ তথ্য সংগ্রহ করার জন্য আমাকে একবার আপনার সাথে সাক্ষাৎ করতে হবে। আমি আপনাকে জানাতে চাই যে , এটি সম্পূর্ণ একটি একাডেমিক অধ্যয়ন এবং প্রাপ্ত তথ্য অন্য কোন উদ্দেশ্য ব্যবহার করা হবে না । আপনার দ্বারা প্রাপ্ত সমস্ত তথ্য গোপন রাখা হবে এবং প্রাপ্ত তথ্য অন্য কোন উদ্দেশ্যে ব্যবহার করা হবে না । আপনার দ্বারা প্রাপ্ত সমস্ত তথ্য গোপন রাখা হবে এবং তথ্যের উৎসও বেনামী থাকবে ,এই গবেষণায় আপনার অংশগ্রহণ স্বেচ্ছায় এবং সেই সাথে সাক্ষাৎকারের সময় আপনি পছন্দ করেন না বা উত্তর দিতে চান না এমন প্রশ্নের উত্তর না দেওয়ার অধিকার আপনার রয়েছে ।

আমি শুরু করার আগে আপনার কোন প্রশ্ন আছে ?

তাহলে সাক্ষাৎকার নিয়ে এগিয়ে যেতে আমি কি আপনার সম্মতি পেতে পারি ?

- হ্যা
- না

অংশগ্রহণকারীর স্বাক্ষর : তারিখ :

ঠিকানা : মোবাইল :

Consent form (English)

Dear participant,

I am Sabuj sarker, student of B.Sc. in physiotherapy program in the Department of SAIC College of Medical Science & Technology (SCMST) which is affiliated by Dhaka University. Doing a research for partial fulfillment of my bachelor degree. The title of the study is "Prevalence of wrist and hand injuries among the professional bike riders in Dhaka city". Here's a list of questions you will need to fill out, including sociodemographic information, work related information and pain related information. It will take about 18-25 minutes and I need to meet with you once to collect the complete information. I would like to inform you that this is purely and academic study and the information obtained will not be used for any other purpose. All information obtained by you will be kept confidential and the source of the information will be anonymous, your participation in this study is voluntary and you have the right not to answer any questions you do not like or do not want to answer during the interview.

Do you have any questions before I begin?

So, may I get your consent to proceed with the interview?

- Yes
- No

Signature of the participants: ……

Address: ……

Mobile no. ……

Date: …../……/……

Appendix – C

ঢাকা শহরের মটরসাইকেল চালকদের মধ্যে কব্জির ব্যথার মহামারী।

কোড নং ঃ ☐ তারিখ ঃ

অংশগ্রহণকারীর নাম:.....

ঠিকানা:.....

মোবাইল নম্বর:.....

বিভাগ-১ ঃ সামাজিক জনসংখ্যা সংক্রান্ত তথ্য(দয়া করে সঠিক উত্তরে টিক √ চিহ্ন দিন)

ক্রঃ নং	প্রশ্ন	উত্তর
১.	অংশগ্রহণকারীর বয়স	
২.	অংশগ্রহণকারীর লিঙ্গ	১। পুরুষ ২। মহিলা ৩। অন্যান্য
৩.	অংশগ্রহণকারীর উচ্চতা	
৪.	অংশগ্রহণকারীর ওজন	
৫.	বি এম আই	
৬.	শিক্ষাগত যোগ্যতা	১। এসএসসি বা এর নিচে ২। এইচ এস সি ৩। স্নাতক ৪। স্নাতকোত্তর
৭.	বৈবাহিক অবস্থা	১। বিবাহিত ২। অবিবাহিত
৮.	ধর্ম	১। হিন্দু ২। মুসলিম ৩। বৌদ্ধ ৪। খ্রিষ্টান ৫। অন্যান্য
৯.	ধুমপানের অভ্যাস আছে	১। হ্যা ২। না

বিভাগ-২ ঃ কাজের সাথে সম্পর্কিত তথ্য

ক্রঃ নং	প্রশ্ন	উত্তর
১০.	প্রতিদিন গড়ে কত ঘন্টা বাইক চালান ?	১। < ৪ ঘন্টা ২। ৫ - ৬ ঘন্টা ৩। > ৬ ঘন্টা
১১.	আপনি কতদিন ধরে বাইক চালান ?	১। ৬ মাসের বেশি ২। ১ বছর ৩। ১ বছরের বেশি
১২.	আপনার মাসিক আয় কত ?	১। < ২০০০০/- ২।২১,০০০- ৩০,০০০/- ৩। > ৩০,০০০/-
১৩.	আপনার বাইকের হ্যান্ড গ্রিপ কি আপনার জন্য আরামদায়ক ?	১। হ্যাঁ ২। না
১৪.	আপনি কি মনে করেন আপনার বাইকটি আপনার শরীরের সাথে মানানসই ?	১। হ্যাঁ ২। না
১৫.	আপনি কি বাইক চালানোর সময় কোন গ্লাভস ব্যবহার করেন ?	১। হ্যাঁ ২। না
১৬.	দীর্ঘদিন ধরে বাইক চালানোর কারনে আপনার কব্জিতে ব্যথা হয় কি ?	১। হ্যাঁ ২। না

বিভাগ-৩ ঃ আপনার কব্জির ব্যথার পরিমাপ করুন। এটি শূন্য (০) মানে আপনার কোন ব্যথা নেই এবং দশ (১০) মানে আপনার ব্যথা সম্ভাব্য সবচেয়ে খারাপ।

ক্রঃ নং	কখন ব্যথা হয়	ব্যথা নাই (০) সবচেয়ে খারাপ (১০)
১.	বিশ্রামের সময় ?	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
২.	বারবার কব্জি ব্যবহার করে কাজ করার সময় ?	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
৩.	ভারী বস্তু উত্তোলনের সময়	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
৪.	সবচেয়ে খারাপ সময়ে	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
৫.	আপনার কত ঘন ঘন ব্যথা হয় ? ০=না , ১০=সর্বদা	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□

এই সপ্তাহে নীচের তালিকাভূক্ত কাজগুলো করা কতটা কঠিন ছিল তা পরিমান করুন। এখানে শূণ্য (০) মানে কোনো কঠিন ছিল না এবং দশ (১০) মানে অনেক কঠিন। যা করতে আপনি সক্ষম ছিলেন না।

ক্রঃ নং	নির্দিষ্ট কার্যক্রম	কঠিন নয় (০) অক্ষম (১০)
৬.	আপনার শার্টের বোতাম লাগানো কতটা কঠিন ?	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
৭.	ছুরি দিয়ে মাংস (অথবা শাক সবজি) কাটা কতটা কঠিন ?	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
৮.	আপনার আক্রান্ত হাত দিয়ে দরজার লক ঘোরানো কতটা কঠিন ?	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
৯.	আপনার আক্রান্ত হাত দিয়ে চেয়ার ধাক্কা দেওয়া কতটা কঠিন ?	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
১০.	আক্রান্ত হাত দিয়ে ভারীবস্তু বহন করা কতটা কঠিন ?	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
১১.	আক্রান্ত হাত দিয়ে ওয়াশরুমে টিস্যু ব্যবহার করা কতটা কঠিন ?	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□

স্বাভাবিক কার্যক্রম ঃ এই সপ্তাহে আপনার স্বাভাবিক কার্যক্রমগুলি করা কতটা কঠিন ছিলো তা পরিমান করুন। স্বাভাবিক কার্যক্রম বলতে আমরা বোঝাতে চাই যে, আপনি আপনার কজিতে সমস্যা শুরুর আগে কী করতেন।

১২.	ব্যক্তিগত কার্যক্রম (যেমন ড্রেসিং/ধোলাই করা)	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
১৩.	বাসাবাড়ির কাজ (যেমনঃ পরিষ্কার /রক্ষণাবেক্ষন)	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
১৪.	কাজ (আপনার চাকরি/অন্যান্য কাজ)	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□
১৫.	বিনোদনমূলক কাজ	০□১□ ২□ ৩□ ৪□ ৫□ ৬□ ৭□ ৮□ ৯□১০□

English Questionnaire

Prevalence of wrist pain among the professional bike riders in Dhaka city

Code No:

Name of the participant:

Address:

Contract No:

Q.N	Question	Answer
Section: A	Socio-demographic information	
1	Age of the participant	
2	Gender of participant	1.Male 2.Female
3	Self-reported weight of the participant	
4	Self-reported height of the participant	
5	BMI	
6	Educational Qualification	1.SSC or bellow 2.HSC 3.Under-graduate 4.post-graduate
7	Marital status	1.Married 2.Unmarried
8.	Religion	1.Muslim 2.Hindu 3.Buddhist 4.Christian 5.Others
9	Smoking habit	1.Yes 2.No

Section: B	Work-related factors	
10	Average riding hours (per day)	1.<4 hours 2.5-6 hours 3.>6 hours
11	How long have you been riding a bike	1.>6 month 2.1 year 3.>1 year
12	How much is your monthly income?	1.<20000 2. 21000-30000 3.>30000
13	Is the hand grip for your bike comfortable for you?	1.Yes 2.No
14	Do you think your bike fits your body?	1.Yes 2.No
15	Do you use any gloves while riding the bike?	1.Yes 2.No
16	Does your wrist hurt from long days riding?	1.Yes 2. No

Rate the amount of pain in your wrist/hand. A zero (0) means that you did not have any pain and a ten (10) means that you had the worst possible pain.

PAIN when...	**NO PAIN (0) WORST POSSIBLE (10)**
1. At rest	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
2. doing a task with a Repeated wrist/hand movement	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
3. lifting a heavy object	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
4. at its worst	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
5. How often do you have pain? 0 = never, 10 = always	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□

Rate how difficult it was doing the things listed below, this week. A zero (0) means it was not difficult at all and a ten (10) means it was so difficult you were unable to do it.

SPECIFIC ACTIVITIES	**NOT DIFFICULT (0) UNABLE (10)**
6. Fasten buttons on your shirt?	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
7. Cut meat (or vegetables) using a knife?	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
8. Turn a door knob with your affect hand?	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
9. Use your affected hand to push up from a chair?	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
10. Carry a heavy object in your affected hand?	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
11. Use bathroom tissue with your affected hand?	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□

USUAL ACTIVITIES- Rate how difficult it was doing your usual activities, this week. By usual activities, we mean what you did before you started having a problem with your wrist/hand.

12.Personal activities (like dressing/washing)	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
13.Household work (like cleaning or maintenance)	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
14. Work (your job or other work)	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□
15.Recreational activities	0□ 1□ 2□ 3□ 4□ 5□ 6□ 7□ 8□ 9□ 10□

Gant chart

Activities/ Month	July 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23
Proposal Presentation												
Introduction												
Literature Review												
Methodology												
Data Collection												
Data Analysis												
Result												
1st Progress Presentation												
Discussion												
Conclusion And Recommendation												
2nd Progress Presentation												
Communication with supervisor												
Final Submission												