

Prevalence of Work-Related Musculoskeletal Disorders in E-Commerce Delivery Boys from Pune (Maharashtra)

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DOI: <https://doi.org/10.52403/ijhsr.20231039>

ABSTRACT

Introduction: In India E-commerce industry has been rapidly growing since last 2 decades. With the rise of E-commerce business and the demand for doorstep delivery of purchased products, the delivery workers or delivery boys have become backbone of E-commerce industry.

Due to harsh working conditions, they face increased risk for work related musculoskeletal disorders.

Method: In this study a total of 362 delivery boys of age group 20-30 years were tested for musculoskeletal disorders. They were evaluated using Standardised General questionnaire of the Nordic musculoskeletal pain questionnaire.

Result: In this study it was found that majority of delivery boys complained of low back pain which was about 69.06%. About 59.36% and 33.15% complained of shoulder and upper back pain. This was followed by neck pain with 32.04%.

Other parts of the body were also found to be affected, they are Wrist/Hand (27.07%), Knees (25.97%), Elbows (20.44%), Hips/Thighs (11.88%) and Ankles (10.22%).

Conclusion: This study revealed that E-commerce delivery boys most oftenly suffered from musculoskeletal problems and pain. Results suggest that more than half of them suffered from low back and shoulder pain. Other regional pain was less common.

Keywords: E-commerce delivery boys, Nordic musculoskeletal pain questionnaire, low back pain.

INTRODUCTION

In India E-commerce industry has been rapidly growing since last 2 decades. ⁽¹⁾

The Indian E-commerce firms are focusing more on popular segments such as food, fashion, health, travel and consumer services etc. ^(1,2)

The E-commerce portals provide goods and services in variety of categories that include apparel and accessories for men and women, health and beauty products, books and magazines, computers and peripherals, vehicles, software, consumer electronics,

household appliances, jewellery, audio/video, entertainment goods, gift articles, real estate and services. ^(1,3)

Some popular e-commerce sites in India are Flipkart, Myntra, Jabong, Amazon, Snapdeal, ebay, Paytm, Shop Clues, Pepperfry, etc. ^(1,3)

The robust growth of e-commerce has generated a new job opportunity in India. ^(1,4)

With the growing demand of home delivery of products purchased online, the 'delivery workers' or the 'delivery boys' who deliver

the product at customer's doorstep have become the backbone of e-commerce industry. (1,5).

The government initiatives such as Digital India, Skill India, Start-up India and Make in India are also contributing to the growth of e-commerce industry. (1,4).

Merriam-Webster Dictionary (2012) describes delivery boy as a person employed by a retail store to deliver small orders to customers on call. (6,7).

The process of delivery gives a lot of stress in an effort to meet the number of delivery target per day, ensuring to deliver the goods/products to the right person, in right area and at right time. (1)

They face health related risks which are due to carrying heavy load bag pack in the back, long hours of motorcycle riding, experiencing heavy traffic, sometimes riding on poor roads, and face road hazards including accidents, injuries and fatigue etc. (1).

Common health concerns identified are severe shoulder and back pain, accidents causing fractures, sprains and injuries, fatigue headache and loss of appetite.

Source of health concern are long working hours, exposure to vehicular pollution, long hours of driving and vibration, carrying heavy load bag on back, outdoor work throughout the year (scorching heat, chilling water and rain), work related stress, skipping lunch and breakfast. (6).

Musculoskeletal disorder is described as an injury or dysfunction that commonly involves the supporting structures of body as well as the nerves, muscles, bones and cartilages.

They are collectively caused by repetitive movements or sustained poor and awkward positions. (12).

Musculoskeletal disorders are the most common occupational injuries that can lead to decreased productivity, impose direct and indirect costs on society, and increase the time loss and work-related disabilities. (8).

Work-related musculoskeletal disorders (WMSDs) are defined as symptoms caused or aggravated by occupational risk factors,

including discomfort, damage or persistent pain in body structures. (9).

WMSDs are widespread range of inflammatory and degenerative disease conditions which result in pain and functional loss, disturbing the body part. (8).

There is lack of awareness or ignorance of physical health combined with long duration of outdoor work, physical injuries and stress create conditions that may cause problems in future. (6). There are few studies stating that musculoskeletal problems are common in e-commerce delivery boys but no known study is done in prevalence of work-related musculoskeletal disorder in e-commerce delivery boys.

Hence, the purpose of this study is to find the prevalence of Work-related musculoskeletal disorder in E-commerce delivery boys from Pune

The objective of this study is to find out the prevalence of work-related musculoskeletal disorders in Delivery boys from Pune using Standardised General Questionnaire of the Nordic musculoskeletal Questionnaire, to find out the most prevalent musculoskeletal disorder in e-commerce delivery boys and to find out the relationship between work related musculoskeletal disorder and experience of the delivery boys from Pune (Maharashtra).

MATERIALS & METHODS

METHODOLOGY

Sample size- 362

Study design – cross-sectional study

Sampling method – Convenient sampling

Study population-E-commerce Delivery boys

Study setting- from Pune

MATERIALS

1.Study duration- 6 months Standardised General Questionnaire of the Nordic musculoskeletal pain questionnaire

Assessment form

2.Pen

3.Paper

Outcome measure:

Standardized General Questionnaire of the Nordic musculoskeletal pain questionnaire. (11).

The questionnaire consists of structured, forced, binary or multiple-choice variants and can be used as self – administered questionnaire or in interviews.

The general questionnaire was designed to answer the following questions: ‘Do musculoskeletal troubles occur in a given population, and if so, in what parts of the body are they localised?’

With this consideration in mind, a questionnaire was constructed in which the human body (viewed from the back) is divided into nine anatomical regions

These regions were selected on the basis of two criteria:

Regions where symptoms lead to accumulate

Regions which are distinguishable from each other both by the responded and health surveyor

The verbal questions deal with anatomical area in turn, and inquire whether the responded has, or has had, troubles in the respective areas during the preceding twelve months, whether this pain is disabling and whether it is ongoing. Fig 1 shows the anatomical areas and the layout of the questionnaire.

The standardised general questionnaire of the Nordic musculoskeletal pain questionnaire has advantages compared to other survey methods as respondents find it easier to complete the Nordic Musculoskeletal Questionnaire’s simpler questionnaire

Reliability-77%

Validity-80%

Procedure:

Observational study was done on 362 participants and data was collected

according to inclusion and exclusion criteria. Study was approved by the ethical committee. Consent was taken from each participant prior to the study and Assessment forms were circulated to the e-commerce delivery boys from Pune (Maharashtra)

The participant who met the inclusion criteria were selected and added to study. Participant were interviewed and the Nordic questionnaire was filled.

The data was collected and analyzed.

INCLUSION CRITERIA

1. Subjects willing to participate
2. Delivery boys in the age group of 20-30 years with average working hours of 6-10 hours per day.
3. Only male’s participants to be taken.
4. Driving for more than 4 to 5 hours per day.
5. Carrying average weight of 10-20kg.

EXCLUSION CRITERIA

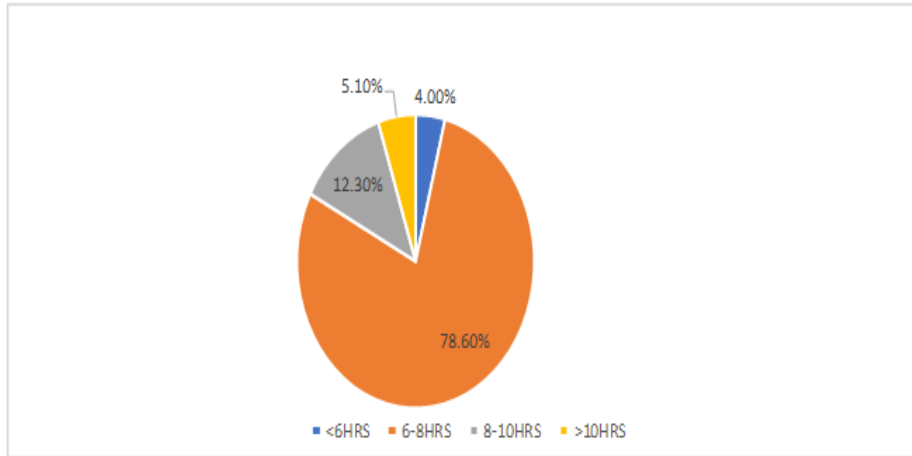
1. Those who are having any recent musculoskeletal injuries due to trauma.
2. Congenital deformities.
3. Having any neurological problems (excluding work –related neurological problems)
4. Recent fractures.
5. Metastasis.
6. Those who are involved in any form of exercise or workout daily.
7. Those who play any sport.

RESULT

The Data that fulfilled the inclusion criteria was exported to excel sheet and was further analysed.

362 subjects have been included in the study according to the inclusion criteria.

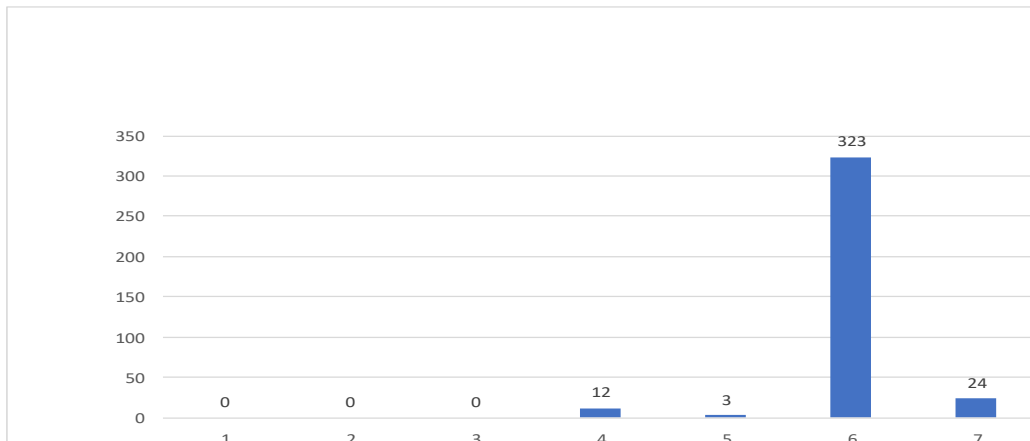
NO. OF WORKING HOURS



Pie chart 1. working hours in percentage

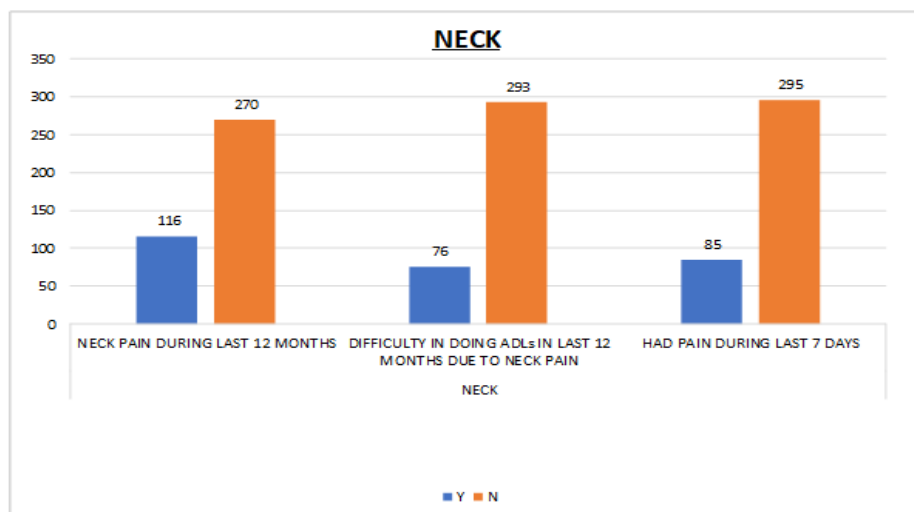
The above pie chart shows majority of delivery boys work for 6-8 hours.

NO. OF WORKING DAYS IN A WEEK

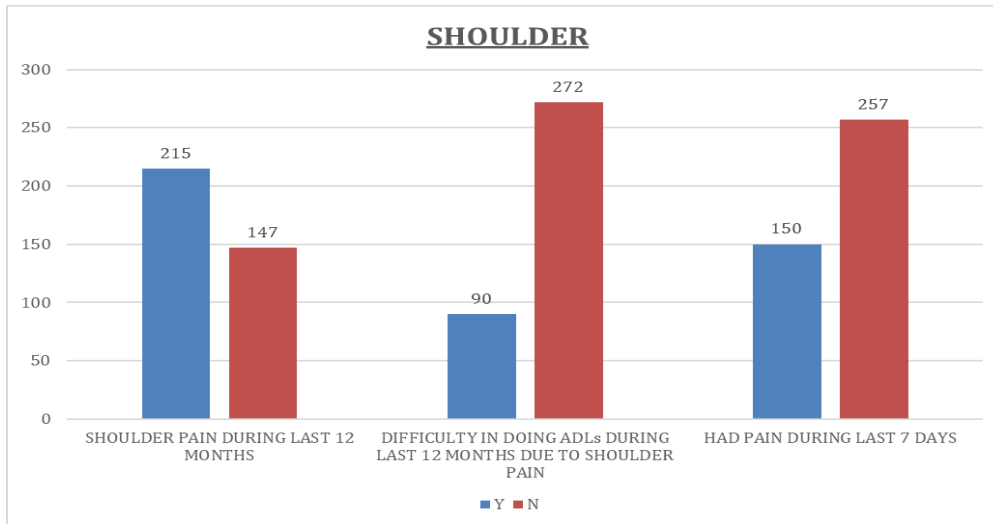


Graph 1. Depicts number of working days in a week with majority delivery boys working for 6 days.

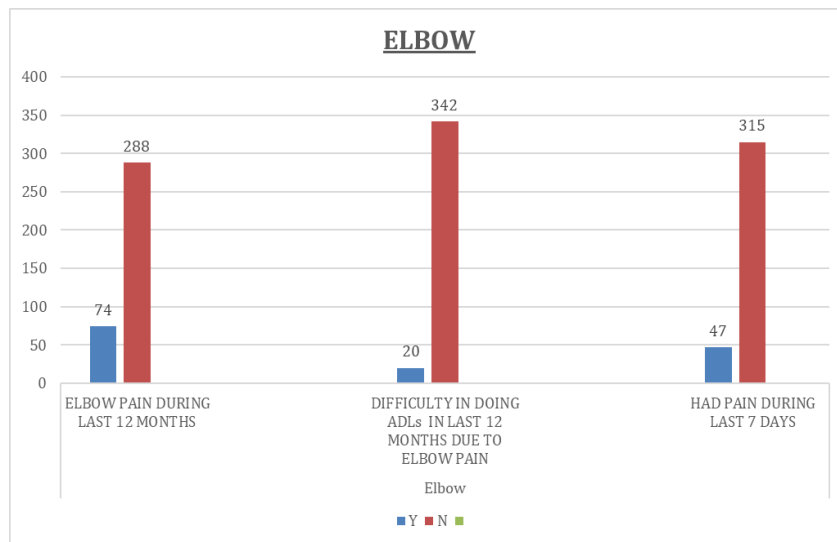
Following are data represented in graphs for each regional area.



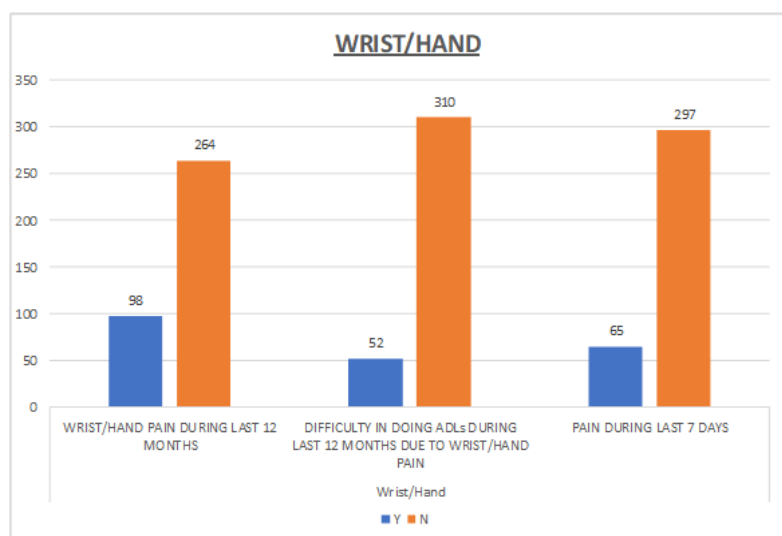
Graph2.Neckpain



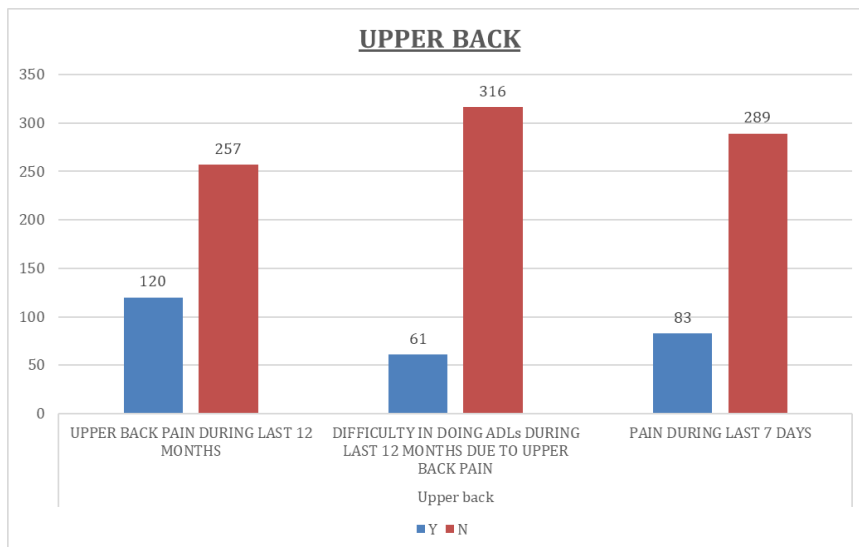
Graph 3. Shoulder pain



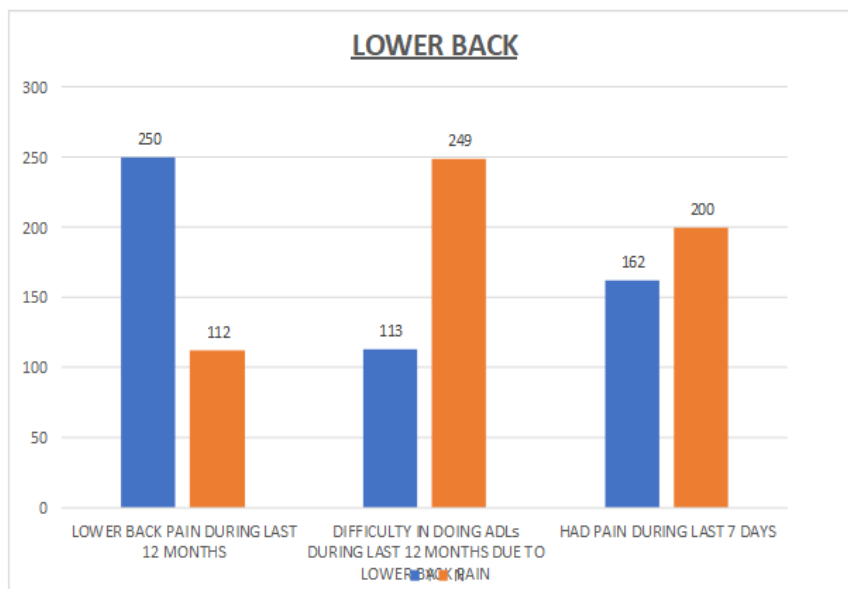
Graph 4. Elbow pain



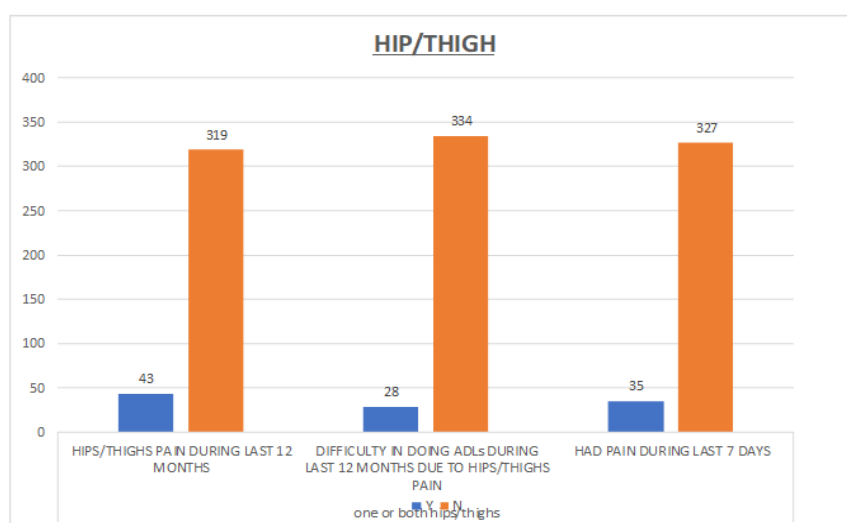
Graph 5. Wrist/Hand pain



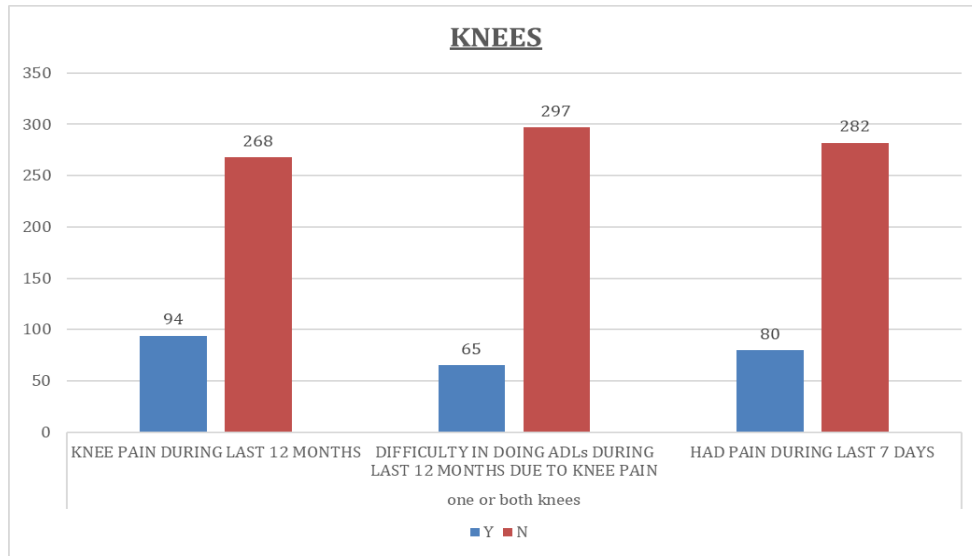
Graph 6. Upper back pain



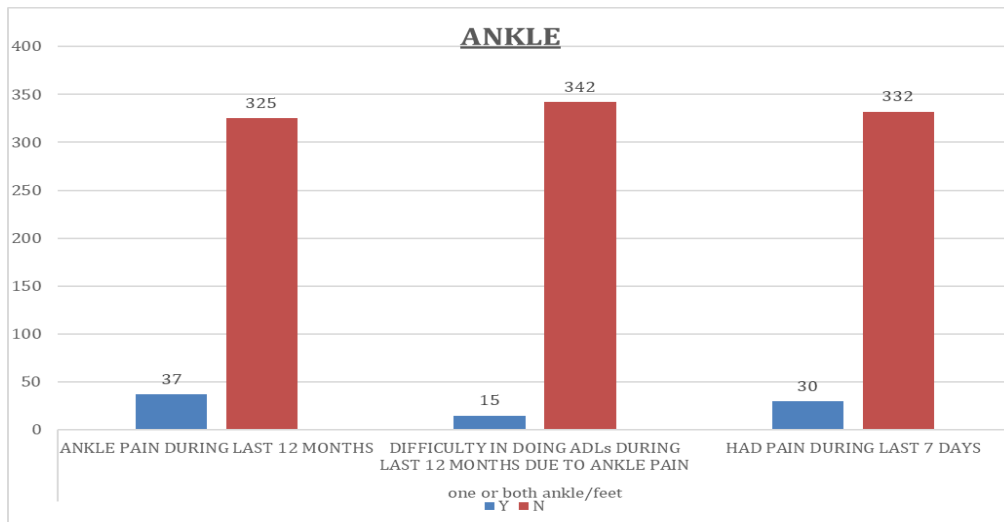
Graph 7. Lower back pain



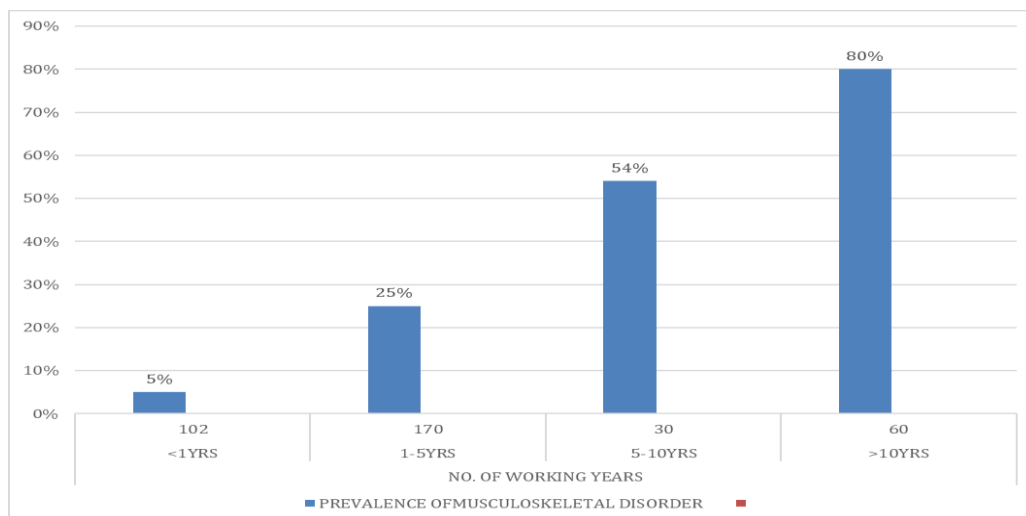
Graph 8. Hip/Thigh pain



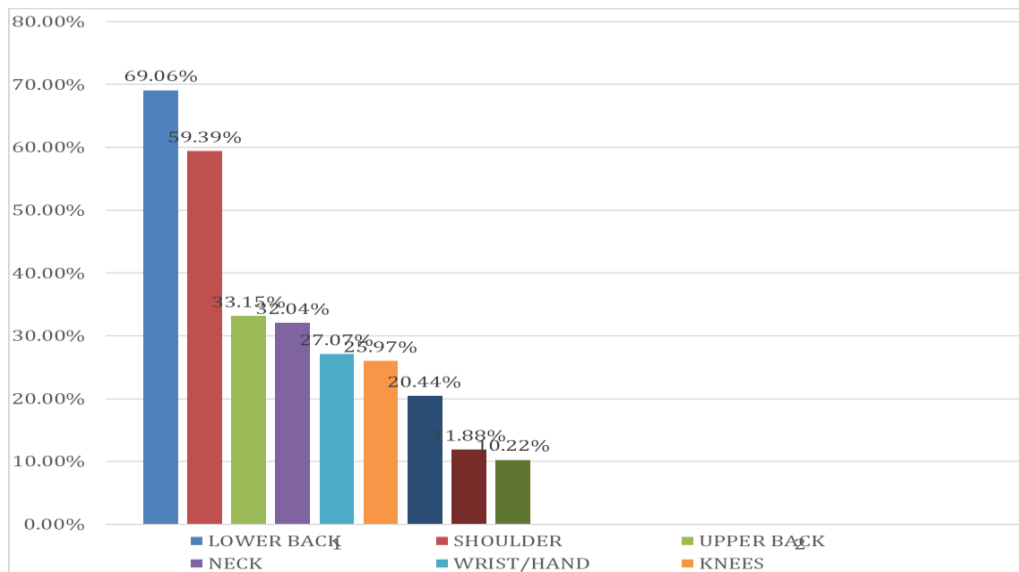
Graph 9. Knees pain



Graph 10. Ankle pain Relationship Between Work Related Musculoskeletal Disorder and Experience of The Delivery Boys.



Graph 11. Relationship between prevalence of musculoskeletal disorder and number of working years



Graph 12. Prevalence of work-related musculoskeletal disorder.

BODY PART	HAVE YOU EXPERIENCED PAIN IN LAST 12 MONTHS		HAVE YOU EXPERIENCED PAIN IN LAST 7 DAYS		DIFFICULTY IN DOING ADLs IN LAST 12 MONTHS DUE TO NECK PAIN	
	TOTAL		TOTAL		TOTAL	
NECK	116(32.04%)		76(20.99%)		85(23.48%)	
SHOULDERS	215(59.3%)		90(24.86%)		150(41.43%)	
ELBOWS	74(20.44%)		20(5.52%)		47(12.98%)	
WRISTS	98(27.07%)		52(14.36%)		65(17.95%)	
UPPER BACK	120(33.14%)		61(16.85%)		83(22.92%)	
LOWER BACK	250(69.06%)		113(31.21%)		162(44.75%)	
HIPS/THIGHS	43(11.87%)		28(7.73%)		35(9.66%)	
KNEES	94(25.96%)		65(17.65%)		80(22.09%)	
ANKLE	37(10.22%)		15(4.14%)		30(8.28%)	

Table 1. Prevalence with percentage for each regional area

DISCUSSION

The aim of this study was to evaluate the prevalence of work-related musculoskeletal disorders in various anatomical areas among delivery boys from Pune (Maharashtra).

This study showed a high prevalence of musculoskeletal disorders in low back and shoulder among these delivery boys.

Musculoskeletal disorders are described as an injury or dysfunction that commonly involves the supporting structures of the body as well as the nerves, muscles, bones

and cartilages. They are collectively caused by repetitive movements or sustained poor and awkward positions.⁽¹³⁾

Results of the study showed that there is a high prevalence of musculoskeletal disorders among the delivery boys i.e., Low back pain (69.06%) followed by Shoulder pain (59.36%) was the most identified.

In this study, participants were found to be working in continuous sitting posture while riding bike.

Continuously working in sitting position results in static loading.

Continuously riding bike on poorly constructed roads with load on back causes undue pressure on lower back contributing to its discomfort. Participants were also found to lift heavy objects while bending through their back and not from their knees, which is one of the most common reasons behind the discomfort/pain in the Lower Back region.

Participants were carrying heavy load on their back while riding bike with backpack straps on their shoulders causing abnormal force on shoulders and faulty posture which may be contributing factor to shoulder pain, apart from static load participants require to lift heavy bag pack while loading them on bike which may also be reason for shoulder discomfort.

Followed by Low back and Shoulder, Upper back pain (33.15%) was found to be prevalent due to the continuous static posture causing muscles to overwork to sustain the load.

Participants were found to ride the vehicle with head positioned forward in relation to neck putting abnormal force on neck muscles which can be possible reason for Neck pain in them.

Wrist/Hand pain (27.07%) was found with reason being continuous bike riding causing repetitive stress and static posture of wrist.

Knee pain (25.97%) and Elbow pain (20.44%) was also found as the participants at times needed to climb stairs to deliver the load carrying parcel.

Hips (11.88%) and Ankle (10.22%) pain was also found in the participants but the

prevalence was relatively less than other parts of the body.

CONCLUSION

From this study we can conclude that Low back is most commonly affected due to pain in the delivery boys followed by shoulders pain and Upper back pain.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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- How to cite this article: Rutuja Shinde, Kiran Jeswani. Prevalence of work-related musculoskeletal disorders in E-Commerce delivery boys from Pune (Maharashtra). *Int J Health Sci Res*. 2023; 13(10):289-298. DOI: <https://doi.org/10.52403/ijhsr.20231039>
