

# Prevalence of Disability in Food Delivery Boys with Chronic Occupational Low Back Pain - An Observational Study

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## ABSTRACT

**Introduction:** Due to rapid urbanization, the work of food delivery boys is tremendously increasing, leading to an increased prevalence of low back pain in them. This low back pain may eventually lead to temporary or permanent disability. Thus, the need of the study was to understand the prevalence of the disability due to chronic occupational low back pain which may occur in this population.

**Aim:** To find the prevalence of disability in food delivery boys with chronic occupational low back pain.

**Objectives:** To determine the prevalence of disability in food delivery boys with chronic low back pain using the Oswestry low back disability questionnaire.

**Methods:** An observational study was conducted with 361 food delivery boys, aged 30-40 years, complaining of low back pain for more than 6 months. Only males who could read and understand English and who traveled for at least 6 hours a day were included in the study. The ones who had spinal deformities, any recent fractures, neurological disorders, or recent soft tissue or ligament injuries around the spine were excluded from the study. Food delivery boys who were involved in any other occupation were also excluded.

**Results:** The average hours of riding the bike have been reported as 10.96 hours/day with an average distance of 141.69 kilometers daily. The average score on the Oswestry low back disability questionnaire was 8.63, accounting for 18.64% disability i.e. Minimal disability.

**Conclusion:** This study concluded that the prevalence of disability in food delivery boys having chronic occupational low back pain is 64% indicating Minimal and 36% indicating Moderate disability.

**Keywords:** Chronic occupational low back pain, Disability, Food delivery boys, Oswestry disability index.

## INTRODUCTION

India boasts a population of 1.2 billion, with a workforce totaling 481 million. Annually, twelve million young individuals integrate into the country's workforce. Livelihoods

are pursued based on familial traditions, skills, and educational levels, spanning both rural and urban areas. <sup>(1)</sup> The dynamics of employment in these sectors are evolving due to the influence of globalization and

shifts in the market economy. India, as an emerging economy, has garnered attention from developed nations due to its substantial workforce, cost-effective labor, rapid urbanization, the growth of metropolises, and innovative business models fostering employment. Examining Pune specifically reveals its status as a rapidly growing metropolitan city, both in terms of population and economic development. Online shopping has become mainstream, offering convenience and efficiency. On-the-go and home delivery food models thrive in Pune's urban hustle, catering to the need for convenient dining options amid crowded metros.<sup>(2)</sup>

The World Health Organization's International Classification of Impairments, Disabilities, and Handicaps recognizes low back pain as a condition revealing loss or abnormality of the structure of the lumbar spine with psychological, physiological, or anatomic etiology or, as a deficiency that causes a disability limiting or preventing full performance of physical activities.<sup>(3)</sup>

Low back pain (LBP) refers to discomfort situated between the lower ribcage and the buttocks, categorized based on duration as acute, sub-acute, or chronic. Two main types exist: specific and non-specific LBP. Specific LBP results from identifiable spinal issues, diseases, or radiating pain from other body parts. Conversely, non-specific LBP, prevailing in approximately 90% of cases, lacks a clear disease or structural cause.<sup>(4)</sup>

Occupational low back pain is the largest single health problem related to work and affects the economically active part of the population. Both individual and professional risk factors are involved in the genesis of low back pain. The most common individual risk factors are age, sex, body mass index, muscle imbalances, muscle strength, and socioeconomic conditions. The most common professional risk factors involve incorrect movements and postures caused by inadequate working environments, the functions of available equipment, and how work is organized and carried out. Factors that have been identified

as a risk of occupational low back pain include cumulative traumas, dynamic activities related to movements of trunk flexion and rotation, heavy physical work, bending or squatting, macro traumas, lifting or carrying loads, exposure to long work shifts without pauses, whole-body vibrations, and static and inadequate postures.<sup>(3)</sup>

According to research, the prevalence of low back pain varies from 50 to 84%. In this occupational low back pain is commonly seen.<sup>(5)</sup> Chronic back pain is defined as back pain that lasts for longer than 7–12 weeks and may not have well-defined underlying pathological causes.<sup>(6)</sup> Working long hours, heavy duties, lifting weights, lack of physical exercise and psychological problems are some of the factors that contribute to low back pain becoming chronic.<sup>(3)</sup>

Delivery involves the movement of goods from a specified source location to a predetermined destination. In the realm of food delivery, consumers request restaurants to bring their desired items directly to their doorstep. Notably, delivery personnel form a significant segment of the workforce, playing a crucial role in the supply chain for the home delivery of products bought online.<sup>(7)</sup> According to the Merriam-Webster Dictionary (2012), a delivery boy is defined as an individual employed by a retail store to fulfill small orders for customers upon request.<sup>(8)</sup>

According to a study conducted by Mithul Patel,<sup>(9)</sup> the prevalence of low back pain in this population is 38% in food delivery boys. Due to reasons such as prolonged hours of sitting without back support, work-related stress, riding a bike with less comfort due to hard suspension, sloppy driving seats, and long handles, not only the long working hours but overdriving also could be the burden for delivery boys. Commuting time as well as working hours affects their lifestyle and health.<sup>(9)</sup>

Thus, the study aims to study the Prevalence of disability in food delivery boys with chronic low back pain.

## MATERIALS & METHODOLOGY

An observational study was conducted with 361 food delivery boys, aged 30-40 years, complaining of low back pain for more than 6 months. Only males who could read and understand English and who traveled for at least 6 to 8 hours a day and covered 60 to 70 km a day were included in the study. The ones who had spinal deformities, any recent fractures, neurological disorders, or recent soft tissue or ligament injuries around the spine were excluded from the study. Food delivery boys who were involved in any other occupation were also excluded. Data was collected according to inclusion and exclusion criteria. The study was approved by the ethical committee. Consent was taken from each participant before the study and assessment forms were circulated to the food delivery boys from Pune (Maharashtra).

The participants who met the inclusion criteria were selected and added to the study. Participants were interviewed and the Oswestry disability questionnaire was filled. Oswestry disability index (ODI) <sup>(10)</sup>

The ODI has been developed to assess pain-related disability in people with acute, subacute, or chronic low back pain. The ODI covers 1 item on pain and 9 items on activities of daily living (personal care, lifting, walking, sitting, standing, sleeping, sex life, social life, and traveling).

The ODI is normally completed by patients using paper and pen.

For each item, the scoring increases incrementally by 1 with each response option, from 0 (first response option) to 5 (last response option). Missing values are omitted. A percentage is worked out to get the total score. The total ODI score ranges from 0 (no disability) to 100 (maximum disability).

The original developers of the ODI intended for scores from

0 –20 to indicate "minimal disability,"

21 – 40 to indicate "moderate disability,"

41– 60, 61 – 80 to indicate "housebound,"

81 –100 to indicate "bedbound".

Data was analyzed and conclusions were drawn.

## RESULTS

This study was conducted to check the prevalence of disability in food delivery boys total of 361 food delivery boys from in and around Pune city were assessed. The results showed that the Average age of the food delivery boys was 34.43 years, the average hours of driving per day were 10.96 hours/day, and the average distance covered daily 141.69km/day were included.

The below table explains the hours of driving/day related to the number of participants. The maximum number of participants (84) was found to travel for 10hrs and the minimum number of participants (1) was found to travel for 7hrs.

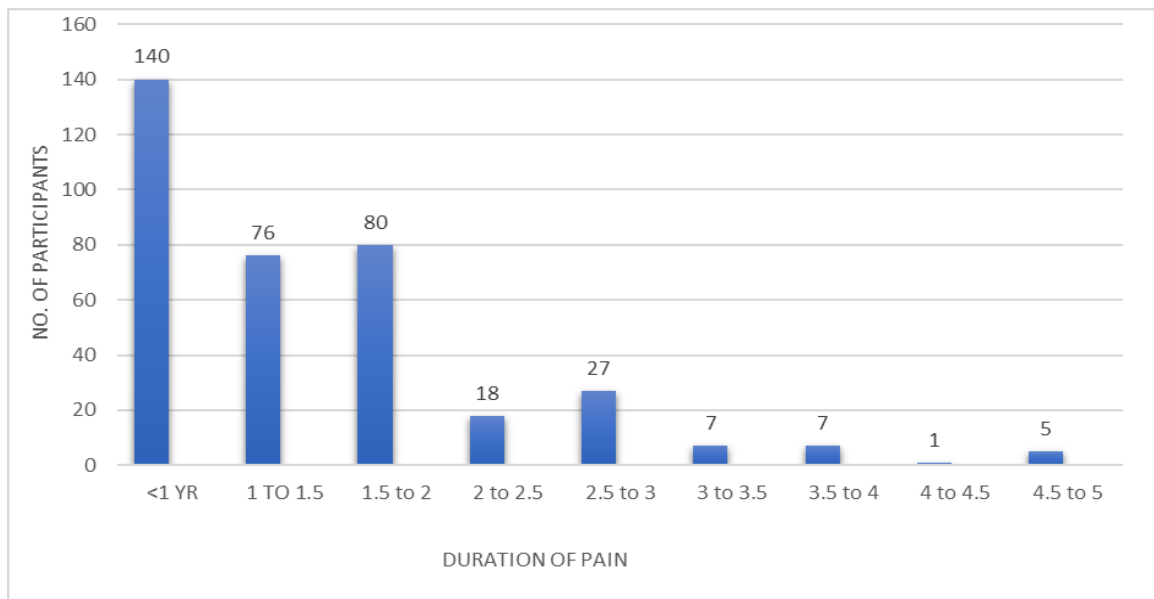
Hours of driving/day	Number Of Participants
7	1
8	35
9	44
9.5	6
10	84
11	42
12	75
13	39
14	16
15	19
Grand Total	361

TABLE 1: HOURS OF DRIVING WITH NUMBER OF PARTICIPANTS

The graph below explains the duration of pain (in years) related to the number of participants. The maximum number of

participants i.e. 140 participants were found to have less than 1 year of pain duration and

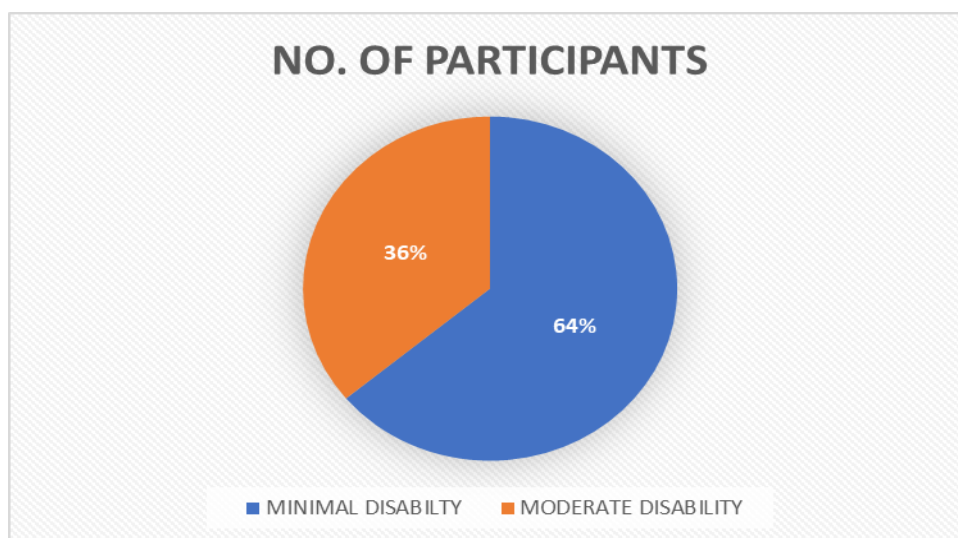
the least i.e. 1 participant were found to have 4 to 4.5 years.



GRAPH 1: NUMBER OF PARTICIPANTS WITH PAIN DURATION.

The results indicate that the average total score of sums of categories in the Oswestry scale is 8.63, with an average percentage score of 18.64, suggesting minimal disability (64%). Out of 361 participants, 231 participants showed minimal disability

and 130 showed moderate disability thus the results indicate that among food delivery boys from Pune, 64% exhibit minimal disability, while 36% experience moderate disability.



GRAPH 2: PERCENTAGE OF DISABILITY IN PARTICIPANTS

## DISCUSSION

This study aimed to study the Prevalence of disability in food delivery boys with chronic low back pain in and around Pune (Maharashtra). A total of 361 subjects were assessed to find the prevalence of disability in food delivery boys with chronic

occupational low back pain. The Disability was assessed using the Oswestry disability index. The result of the study showed a 64 % prevalence of minimal disability and a 36 % prevalence of moderate disability in food delivery boys with chronic occupational low back pain.

Disability from low back pain is highest in working age groups worldwide, which is particularly concerning in low- and middle-income countries where informal employment is common and possibilities for job modification are limited.<sup>(11)</sup> Low back pain is the main contributor to the overall burden of musculoskeletal conditions with over 570 million prevalent cases worldwide, responsible for 7.4% of global YLDs (years lived with disability).<sup>(12)</sup> Low back pain (LBP) has the highest prevalence globally among musculoskeletal conditions, around 619 million people live with it and so LBP is the leading cause of disability world.<sup>(4)</sup> This prevalent condition not only poses a substantial public health concern but also carries a significant economic burden, often linked to diminished work productivity. Low Back pain becomes a disability when it limits your ability to engage in daily activities, including those required for work.<sup>(9)</sup>

Biophysically, persistent low back pain can manifest through alterations in muscle size, composition, and coordination, setting individuals with pain apart from those without the pain. Psychological factors, including depression, anxiety, catastrophizing, and self-efficacy, are often studied in isolation, yet there exists a significant overlap among these constructs. Their presence in individuals with low back pain correlates with an elevated risk of disability, even though the underlying mechanism remains incompletely understood. The social dimension adds another layer to the complexity, as chronic disabling low back pain disproportionately affects those with low income and limited education. Individuals engaged in routine and manual occupations, experiencing less satisfying work, or subject to higher physical workloads face an increased likelihood of developing disabling low back pain over time.<sup>(12)</sup>

The food delivery boys who suffer from chronic occupational low back pain include the following factors contributing to disability: Food delivery work is an outdoor

or open-air work demanding an average of 8-12 hours every day. Online food delivery apps like Swiggy and Zomato ensure delivery on time. The delivery boys are engaged in the respective restaurants to collect their orders from the respective restaurants and deliver the food parcel covering a radius of 80-190 kilometers in a day along with carrying the packages and climbing stairs with exposure to different weather conditions like chilling winter, rain or in scorching heat and inhaling roadside fumes, etc. These are supplemented by exposure to conditions like physical interaction with customers of various groups, gender, and socioeconomic profile. In this process, they often feel stress, pain in their lower back, fatigue, catching the common cold, etc. As a daily routine, the delivery boys ride through the lanes of Pune, cross the heavy traffic, and try to reach the customer's door in time. While riding the bike, they continue to have full awareness of the road, the parcels they carry, and the timing of delivery. This causes stress as they can neither afford to avoid the traffic rules, personal safety, and bags they carry nor late delivery.<sup>(1)</sup>

In our study, we found that there were the maximum number of participants (84) who traveled for 10 hours in a continuous sitting posture while riding a bike which resulted in static loading. Continuously riding the bike caused undue pressure on the lower back contributing to its discomfort. These factors contributed to showing the results stating the high prevalence of minimal disability among the food delivery boys.

## CONCLUSION

Thus, this study concludes that the prevalence of disability in food delivery boys with chronic occupational low back pain is 64% accounting for minimal disability, and 36% accounting for moderate disability in and around Pune (Maharashtra).

## Limitation

As the delivery boys had to deliver the parcel on time they were always in a hurry



and not able to give time to fill the questionnaire properly.

The assessment did not include the type of roads on which the participants traveled.

The study did not assess the types of bikes used, such as geared and non-geared.

Whether the participants carried the parcel on their back or in a carrier was not evaluated.

### Future Scope of Study

Future studies should expand the sample size to represent delivery boys from Maharashtra.

Strengthening exercise along with ergonomic advice to improve posture while working can be intervened by the patients to reduce pain and disability.

### Declaration by Authors

**Ethical Approval:** Approved

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

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