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Investigating Musculoskeletal Disorders Seen Among Porters (Coolie)

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ABSTRACT

Background: It is possible to develop inflammatory and degenerative disorders in the soft tissuesof the hands, wrists, elbows, shoulders, necks and lower backs as a result of long-term, intense andrepetitive employment. Among railway porters, this research hopes to look at the incidence of musculoskeletal disorders (MSDs).

Materials & Methods: The Modified Nordica Questionnaire and the Visual Analog Scale were used to create a questionnaire that was used to evaluate the prevalence of musculoskeletal diseases (MSDs) among railway porters. Due to a lack of knowledge among Railway porters, the questionform was administered to the porters of the railroads, and the data was then completed back in theform. The information from all 300 participants was compiled and then imported into MS Excel for further research.

Results: All of the participants in the study reported feeling a great deal of pain, and the data indicate that lower back discomfort has had a significant influence on the subjects' ability to do their professions since last year. Seventy per cent of individuals who took part in the research experienced neck discomfort, while fifty per cent claimed shoulder pain, sixty per cent indicated upper back pain, forty per cent reported wrist pain, and 76.5 per cent reported knee pain. Discomfort has been measured at 7.76 on the Visual Analog Scale (VAS). Findings from this studyshow that porters have a greater than predicted prevalence of musculoskeletal issues.

Conclusion: We may conclude that porters have a high prevalence of musculoskeletal problems as a result of this research. The portion of the lower back that has the most impact on all of the porters. Additional research on the issue is required, preferably with a focus on age differences inprevalence rates and subject populations, and a larger sample size overall

Keywords: *Musculoskeletal Disorders, Manual Material Handling, work-related injuries..*

1. INTRODUCTION

An individual who acts as a porter is someone who conveys goods or freight for another. In addition to delivering luggage on a train (a railway porter), porters may also be hired to carry heavy loads on multi-month climbing expeditions at high altitudes and in adverse weather conditions. They can carry things on their heads or backs (backpacks). It is thought that the word "porter" comes from the Latin porter (to carry). Humans were the primary mode of transport for ancient commodities before the domestication of animals and the advent of the wheel (1). If you look at the history of it, it has always existed where slavery was tolerated or allowed, and it continues to do so now in places where modern means of mechanised conveyance are difficult or impossible to use. Specialized transportation services still rely on porters today, despite slavery's abolition and technological advancements (2). Bellhops in hotels, redcaps at railway stations, skycaps at airports, and bearers on adventure trips are often hired by foreign visitors. Sherpas, the ethnic group from whom most of the Himalayan porters belong, are also an essential aspect of mountaineering: they're highly experienced professionals who specialise in the logistics of mountain climbing, rather than just being hired to carry packs (although carrying is integral to the profession) (3). Climbing groups often hire porters/Sherpas from companies that supply them as both porters and mountain guides; however, the terms "guide" and "Sherpa" are not always used interchangeably. During the main expedition's climb, porters are responsible for preparing the path by ascending the mountain with sufficient supplies (for both themselves and the main expedition) and stashing them in strategic locations (4). Before the major expedition starts, this preparation might take months. After a series of ascents and declines, a modest supply depot is constructed at the peak of the mountain. The expedition's main body follows the route's preparation, whether it is in its whole or divided into smaller portions. Only the main expedition is given credit for reaching the summit since the last step is typically performed without porters, who remain at the final camp, a quarter-mile or more below the top. To lay safety lines and drive spikes, porters are often dispatched ahead of the main expedition. As a result, many of them must free-climb. Sherpas, for example, are members of a native ethnic group who are accustomed to living in the mountains and are well-versed in the region's dry environment (5). Porters and Sherpas are commonly considered the most experienced mountaineers, despite their lack of public notoriety, and are often treated with respect since

their efforts are critical to the overall success of the expedition. At times, porters are called upon to help rescue a member of the party who is in danger

or injured. If the rescue mission is successful, numerous porters are needed to return the injured climber(s) down the mountain so the expedition may continue. Many people remember the K2 tragedy of 2008, in which porters died while attempting to rescue stranded climbers. Sherpa guides refused to lead any trips to Mount Everest for the whole year after 16 Sherpas were killed in a 2014 icefall (6).Humans have been used as carriers since the dawn of time because of their adaptability and adaptability. Porters were often used as creatures of burden in the ancient world when labour was typically cheap and slavery was common. Wool and flax were forced into slavery by the Sumerians. Tlamemes in Nahuatl, Mesoamerican porters, were responsible for transporting all goods in the early Americas when there were few local beasts of burden(7). During colonial times, silleros, or mountain porters, were employed by numerous Andean areas to carry people and their possessions, mostly Europeans, through dangerous mountain routes. As lettermen, porters have been employed over the globe for centuries, and in densely populated places they continue to do so. Even before wheelbarrows and waggons existed, huge numbers of people laboured and carried tremendous quantities of dirt, stone, and brick, culminating in some of the most impressive technical achievements of history's early stages(8).Inflammatory diseases resulting from an injury sustained while doing work-related duties are known as work-related musculoskeletal injuries (WRMI), or work-related musculoskeletal disorders (WMSD). There are two types of WMSDs: 1) those that are the consequence of regular exposure to work activities that significantly contribute to the formation or exacerbation of painful symptoms; and 2) those that are aggravated or persist due to work conditions (9). An overuse or strain injury to the nervous system, joints, or discs in the spine may be the result of repetitive and frequent work activities that create overuse and strain. Repetitive strain injuries, cumulative trauma disorders, and overuse syndrome are among the terms used to describe these problems. The majority of WRMIs affect the hands, wrists, elbows, shoulders, and neck because of the significance of using the upper extremities in the workplace; however, diseases affecting the lower extremities and feet, as well as the spine and back, are common. Work-related incidents such as slips and falls don't get covered by WMSDs, regardless of whether they happened at work or off it. The three most common forms of WMSDs are muscle, tendon, and nerve injuries. These include carpal tunnel syndrome (CTS), tendonitis, thoracic outlet syndrome (TOS), and back pain (10). Nearly three out of every five EU-28 workers report MSDs, according to a 2019 study by the European Agency for Safety and Health at Work (EU-OSHA) (11). MSDs are ranked as the most critical work-related health concern by 60% of EU workers. One out of every five EU-28 workers had to cope with a chronic neck or back issue in the last year. An estimated 12.5% of all illnesses and injuries in Australia and 23.5% of all non-fatalities occurred in 2011 as a result of MSDs, and in 2014-2015 6.9 million Australians were affected by MSDs. During the period from 2012 to 2013, $24 billion was spent. The Australian Work Health and Safety Strategy 2012-2022 lists MWSDs as one of the six most important disorders that need to be addressed (12). WMSDs cost the United States between $45 and $54 billion a year, according to an Institute of Medicine study in 2001. Doctors in the United States saw nearly 70 million patients with MSDs in 2001, and MSDs resulted in an average of eight days of absence from work (13). According to the National Health Interview Surveys conducted in 2006, 2009, and 2014, 11.2 million workers had WMSDs, with an average 30-day frequency of 8.23%; construction workers have the highest incidence.

Ergonomics is the study of people in the workplace and the process of creating or reorganising workplaces, items, and systems such that they are appropriate for their users. It aims to improve working conditions and the surrounding environment to reduce the risk of injury (14). As defined by the International Ergonomics Association, ergonomics is "the scientific discipline concerned with the understanding of interactions between humans and other elements of a system and the profession that applies theory and principles as well as data and methods to design to optimise human well-being and overall system performance" The study of ergonomics is a scientific endeavour. Anatomy and physiology, psychology, engineering, and statistics are used to ensure the product's design is tailored to the user's strengths and skills (15).

2. METHODOLOGY

The study at hand is an observational study conducted in the Old Delhi area with a focus on individuals aged between 25 and 45 years. The sampling process employed random sampling techniques based on predefined inclusion and exclusion criteria. A total of 300 subjects were selected for the study, all of whom met the inclusion criteria, which included individuals with a history of back pain, male individuals, and those with a minimum of 5 years of work experience. On the other hand, exclusion criteria encompassed individuals with congenital disorders, degenerative disorders, and female individuals. To collect data, two main tools were utilized. The first was the Nordic Musculoskeletal Questionnaire, which was developed with funding from the Nordic Council of Ministers. This questionnaire was used to assess the prevalence of musculoskeletal issues among the study participants. It's noteworthy that when this questionnaire was employed in studies that specifically examined musculoskeletal diseases and occupational factors, the prevalence of such issues was significantly higher compared to general health evaluations. The second tool was the Visual Analog Scale (VAS), which was employed as a means to gauge pain and discomfort levels among the participants. The study procedure consisted of administering a modified Nordic Questionnaire and the VAS to railway porters working at the Old Delhi Railway Station. Due to the potential lack of familiarity with such questionnaires among the railway porters, researchers conducted interviews to guide them through the questionnaire. Once completed, the data from all 300 participants was gathered and subsequently entered into MS Excel for further analysis and

research. This observational study aimed to provide valuable insights into the prevalence of musculoskeletal diseases among railway porters in the Old Delhi area.

3. RESULTS

Discomfort in the lower back was reported by every participant in the study, and the results of the inquiry show that this pain has had the most significant influence on the subject's capacity to do their occupations over the last year in the majority of instances. A painful sensation was felt in the neck region of 70 per cent of the participants, in the shoulders of 50 per cent of the subjects, in the upper back region of 60.3 per cent of the respondents, in the wrists of 40.6 per cent of the subjects, and in the knee region of 76.5 per cent of the subjects. The VAS score for pain is 7.76 for the result of pain. The results of this study indicate that porters have a significant prevalence of musculoskeletal disorders.

4. LIST OF TABLES:

TABLE NO 1 DEMOGRAPHIC DESCRIPTIVE STATISTICS (WEIGHT, HEIGHT, BMI)

	AGE	WEIGHT(KG)	HEIGHT IN METER	BMI
Mean	41.87	70.59	1.7423	24.2116
N	30	30	30	30
Std. Deviation	1.654	1.380	.12213	4.76993

TABLE NO 2 SHOWS THE NORDIC PAIN QUESTIONNAIRE REULTS

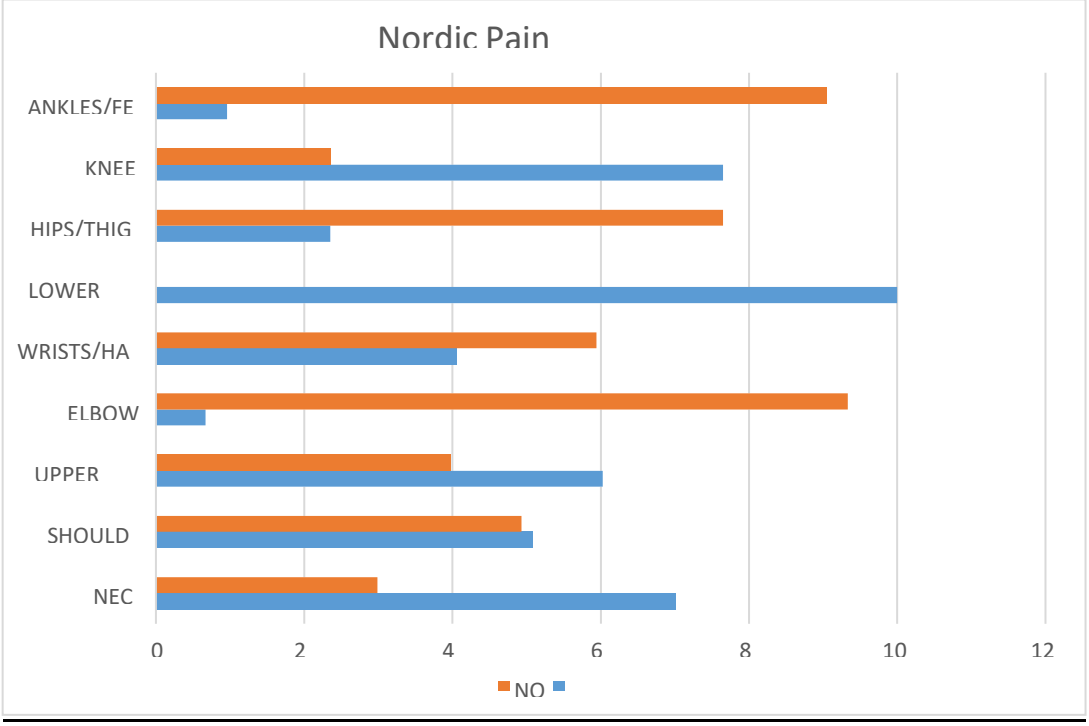
BODY PARTS	12 MONTHS	7 DAYS	WORK EFFECTED ANY TIME
NECK	YES-70.1 NO-29.9	YES-67 NO-33	YES-100 NO-0
SHOULDER	YES-50.74 NO-49.3	YES-67 NO-33	YES-100 NO-0
UPPER BACK	YES-60.3 NO-39.7	YES-39.4 NO-60.6	YES-100 NO-0
ELBOWS	YES-6.7 NO-93.3	YES-0 NO-100	YES-0 NO-100
WRISTS/HAND	YES-40.6 NO-59.4	YES-20.0 NO-80.0	YES-0 NO-100
LOWER BACK	YES-100 NO-0.0	YES-100 NO-0.0	YES-100 NO-0.0
HIPS/THIGHS	YES-23.5 NO-76.5	YES-9.9 NO-90.1	YES-0.0 NO-100
KNEES	YES-76.5 NO-23.5	YES-36.2 NO-63.8	YES-0.0 NO-100
ANKLES/FEET	YES-9.6 NO-90.4	YES-9.9 NO-90.1	YES-0.0 NO-100

TABLE NO 3 VAS SCORE

	MEAN±SD
VAS SCORE	7.76±1.54

5. LIST OF GRAPHS:

GRAPH NO. 1 NORDIC PAIN QUESTIONNAIRE RESULTS



6. DISCUSSION

Lower back pain was reported by every participant in the research, and the findings of the investigation demonstrate that this kind of pain has had the most substantial effect on the participants' ability to do their jobs over the previous year in the majority of situations. A painful sensation was experienced in the region of the neck by seventy per cent of the participants, in the shoulders by fifty per cent of the subjects, in the region of the upper back by sixty-three point three per cent of the respondents, in the wrists by forty point six per cent of the subjects, and in the region of the knees by seventy-six point five per cent of the subjects. The value of 7.76 on the VAS indicates that the patient is experiencing pain as a consequence. According to the findings of this research, there is a considerable incidence of musculoskeletal problems among porters. According to the findings of other research conducted on porters, which were published by Mahdi Chinichian et al. 2020, musculoskeletal issues may be linked to the physical handling of materials. Employees with low incomes are required to take precautions against these dangers because of their socioeconomic situation. The focus of this inquiry is on the individuals known as porters who are responsible for pushing and pulling handcarts both within and outside of the Tehran Grand Bazaar. This study investigated whether or not the porters working in the Iranian Grand Bazaar were at risk of contracting multiple sclerosis (MSD). According to estimates provided by the government, the Grand Bazaar in Tehran employs more than 5,000 people to work as porters. The 398 porters were selected via the application of a simple random selection process. The prevalence of musculoskeletal disorders (MSD) in the population was determined with the use of the standardised Nordic questionnaire for the analysis of musculoskeletal symptoms. The responsibilities of the porters at Tehran's Grand Bazaar were examined throughout the walk-through surveys. In the previous year, 53.8 per cent of participants were found to have an MSD, but in the previous week, 45.2 per cent of participants were found to have an MSD. Discomfort in the lower back and knees were two of the symptoms that were reported the most often in the previous year. It was discovered that the symptoms are connected to a person's age, height, weight, waist circumference, number of children, and the amount of physical labour required to move things that weigh more than 20 kilogrammes. Workers in the Tehran Grand Bazaar are more likely to develop MSDs as a result of their exposure to MMH.

7. CONCLUSION

As a consequence of this study, we can conclude that porters have a significant prevalence of musculoskeletal disorders. The portion of the lower back that has the most impact on all of the porters. Additional research on the issue is required, preferably with a focus on age differences in prevalence rates and subject populations, and a larger sample size overall.

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