

Original Research Article

Prevalence of work related musculoskeletal disorders in truck drivers and its associated risk factors

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ABSTRACT

Background: The main purpose of the study was to find out the different joints affected in the truck drivers and the associated-risk factors for musculoskeletal pain in this population due to the paucity of literature pertaining to Indian truck drivers.

Methods: A self-administered closed-ended validated questionnaire was prepared by the researcher incorporated with Nordic musculoskeletal questionnaire and numeric pain rating scale and the participants were questioned using the same questionnaire and response was recorded by the researcher.

Results: This study found a prevalence rate of work-related musculoskeletal pain to be 76.92% in truck drivers and the most commonly affected joints are lower back followed by the knee, shoulder and cervical spine. The factors which are found to be responsible for work related musculoskeletal pain in truck drivers are age, years of driving, number of driving days in a week, number of driving hours in a day, rest duration, posture, stress, vibration & poor condition of roads.

Conclusions: It can be concluded from the results of this study that extrinsic factors do play a significant role in the causation of work-related musculoskeletal pain in truck drivers and are a leading cause for affecting the health of truck drivers and a frequent cause of sickness absenteeism.

Keywords: Musculoskeletal, Truck-drivers, Prevalence, Factors, Joints

INTRODUCTION

Work-related musculoskeletal disorders (WMSD) are the group of musculoskeletal disorders that include damage to tendons, tendon sheaths, related to bones, muscles, and nerves of hands, wrists, elbows, shoulders, neck, and back. Sustained postures, work environment temperature, repetitions, etc form the basis for development of Work related musculoskeletal disorders.¹

WMSDs are a major source of employee disability and lost wages and reduced work competence of workers and

public vehicle drivers with considerable economic consequences due to workers payment, health expenses, and efficiency losses particularly in developing countries. There is a high prevalence of work-related musculoskeletal disorders in truck drivers which is approximately 78.6% found in Iran.¹

Truck drivers in India have to travel long distances in their lifespan, on an extensive spread of national and state highways that range from well-engineered roads to a complete absence of concrete roads. In a developing country like India, poor condition of roads is responsible

for road shocks resulting in musculoskeletal discomfort, most commonly low back pain.²

Their occupation predisposes them to different risk factors such as sitting and automobile driving, reduced rest duration, tight running schedules, traffic congestion, sedentary nature of the job. These factors mentioned here most likely come into picture due to the constraint of time for delivery of goods and catering market demands.²

It has been postulated that sustained awkward seating posture (lordotic or kyphotic, overly arched or slouched) can result in higher intra-discal pressure and may be injurious to spinal postural health. Sustained increase in intra-discal pressure will consequently lead to the development neck and low back pain.³

Prolonged sitting (sitting for more than half of a working day) is indicated as an increased risk factor for low back pain and sciatica for individuals in those occupations. Low back pain and sciatica are very well known disabling conditions becoming a common cause for sickness absenteeism and taking a toll on the life of some daily wage earning truck drivers.³

The sitting position has been considered as one of the major risk factors for developing LBP. Many authors have reviewed the risk between whole-body vibration and low back pain.⁴⁻⁶ Awkward sitting posture while driving has been regarded as risk factors for low back pain.⁷⁻¹¹

Driver's workplace environmental condition i.e. condition within the cabin, different climatic conditions, vibration and noises & posture while driving is found to be a stress factor contributing to the truck drivers health status. The factors mentioned here form the basis for the development of work related musculoskeletal pain in truck drivers.¹²

Because of poor awareness of truck drivers about sedentary lifestyle makes them more prone to develop work-related musculoskeletal disorders.

METHODS

The study design was a cross-sectional study with a sample size of 78 subjects. The subjects were from various states of India who actively participated in the study and responded to a closed-ended questionnaire. The data was collected from Market yard, Pune, where it is possible to find truck drivers from several states of India. The questionnaire included questions pertaining to (1) Personal and work-related information (2) Work environment, sitting posture while driving, number of driving hours per day, number of driving days in a week, the total number of years of driving. (3) The occurrence of pain, diurnal variation, site and intensity of pain. Sampling method was purposive sampling.

Inclusion-criteria was age group of 21 to 55 years (Mean age 38±5% S.D) & truck drivers with a minimum of two years of work experience.

Exclusion criteria was any history of trauma, congenital deformities, inflammatory arthritis

Outcome measure

Self-administered questionnaire incorporated with Modified Nordic questionnaire and Numeric pain rating scale (NPRS).

The study was conducted from September 2018 to January 2019. Ethical approval was obtained from the ethical committee. The subjects were recruited as per the above-mentioned inclusion criteria. A pilot study was undertaken to test the legitimacy and the final questionnaire was modified after self-administered closed-ended questionnaire was formulated and face validation of the questionnaire was done by four experts in the field of musculoskeletal physiotherapy. Subjects were explained regarding the purpose of the study and how this study will help them in reducing their work-related musculoskeletal problem. Formal consent was obtained from all the subjects. Subjects were questioned from the closed-ended questionnaire and response was recorded by the researcher. The results were summarized in percentile format, tables and graphs were made accordingly.

RESULTS

In the current study, the proportion of joint pain in truck drivers was low back (53.33%) followed by knee (30%), shoulder (30%) and neck (28.33%). Higher incidence of low back pain can be attributed to static loading of the lumbar spine and the road shocks, due to repeated use of clutch and brake drivers complained of knee pain followed by shoulder and neck pain due to prolonged forward head posture.

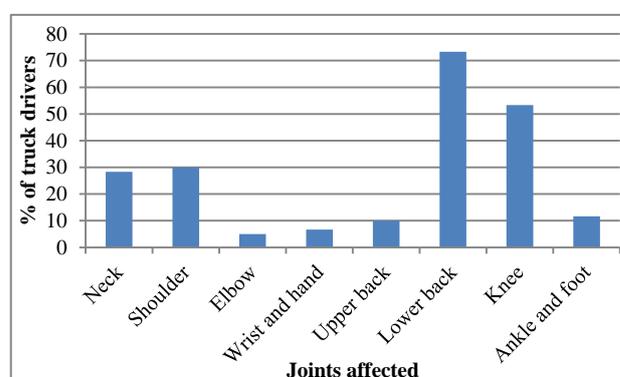


Figure 1: Nordic pain questionnaire.

41.66% reported having suffered from mild pain and 53.33% suffering from moderate pain and 5% from severe pain on the numeric pain rating scale. Pain is the

most disabling factor which is the most common causative factor for sickness absenteeism. This pain is more of chronic origin resulting from micro trauma due to prolonged driving.

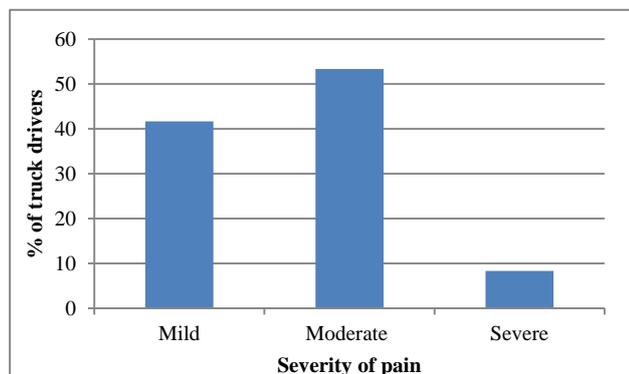


Figure 2: The numeric pain rating scale.

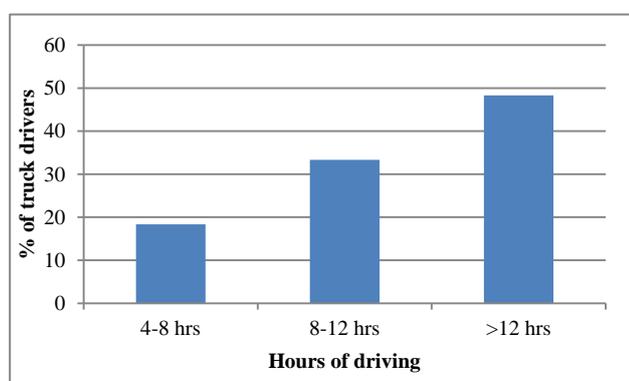


Figure 3: Hours of driving in a day.

48.33% spent more than 12 hours a day for driving (even night driving), 33.33% spent 8-12 hours a day in driving, while 18.33% spent 4-8 hours in driving. This directly implies the time constraint faced by the truck drivers to cater market demands in a stipulated period of time.

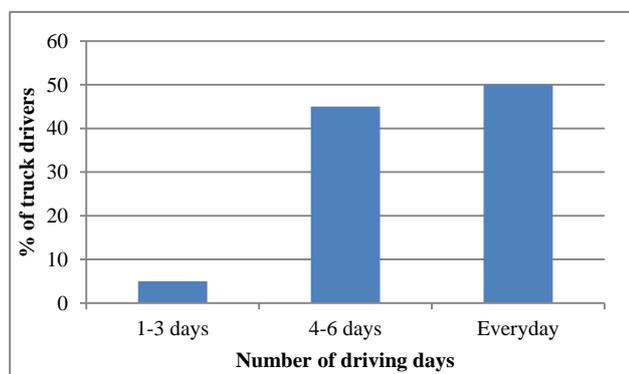


Figure 4: Number of driving days in a week.

Drivers involved in daily driving were (50%), 4-6 days (45%) followed by 1-3 days (5%). Hence daily driving along with duration and experience of driving form the

root risk factors. These findings are suggestive that the number of driving days in a week do contribute to musculoskeletal discomfort.

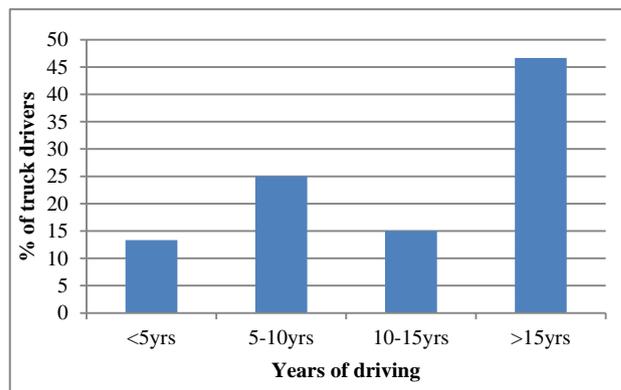


Figure 5: Years of driving experience.

46.66% reported to have been driving for more than 15 years, 25% reported to have been driving for 5 to 10 years. 15% had been driving for 10 to 15 years, 13.33% had been driving for less than 5 years. There are a significant number of drivers with a driving experience of more than 15 years which is suggestive that musculoskeletal discomfort is a result of chronic musculoskeletal micro trauma.

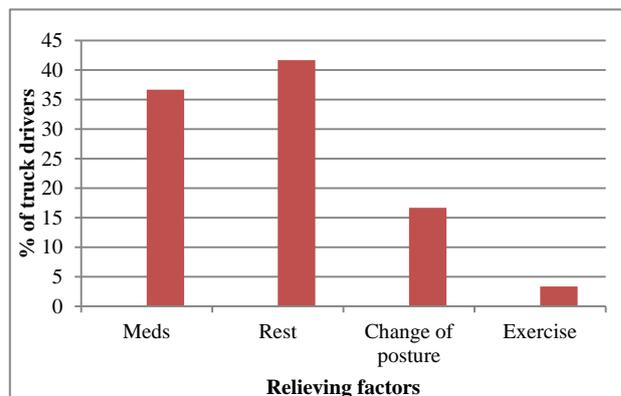


Figure 6: Relieving factors.

41.66% reported having been taking rest to relieve pain followed by medications (36.66%), 16.66% got relief from discomfort by the change of posture. Here rest and exercise are found to be the major relieving factors, but also a matter of concern as the medications mostly used are painkillers and muscle relaxants which have a negative impact on health with prolonged use.

38.33% drivers reported to have slept only 3hrs at night, 33.33% drivers slept for only 4 hours at night, followed by the remainder of 28.33% who slept for 5 hours at night. Due to time constraint in supplying goods from one place to another, truck drivers tend to have a poor sleep schedule, driving continuously twelve to fourteen hours at a stretch.

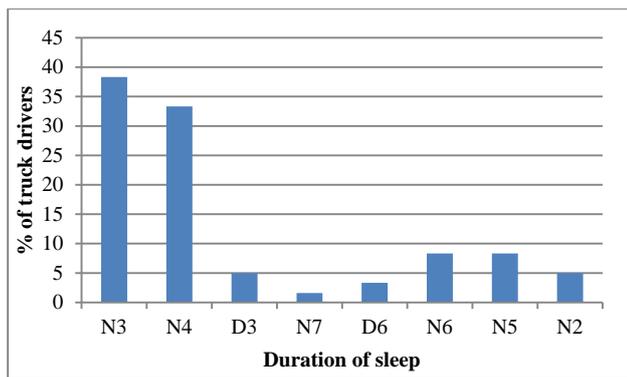


Figure 7: Rest duration.

N-Night, D- Day, Numbers on Y-axis represent hours of rest.

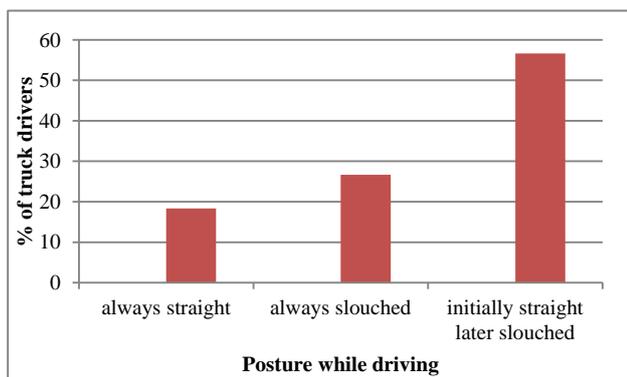


Figure 8: Posture while driving.

Most of the truck drivers reported to have a posture of initially straight later slouched while driving which can be major contributing factor to the causative of low back pain followed by shoulder and neck pain leading to the development of kyphotic posture. 88% of drivers attributed poor quality of roads to be the causative for musculoskeletal discomfort.

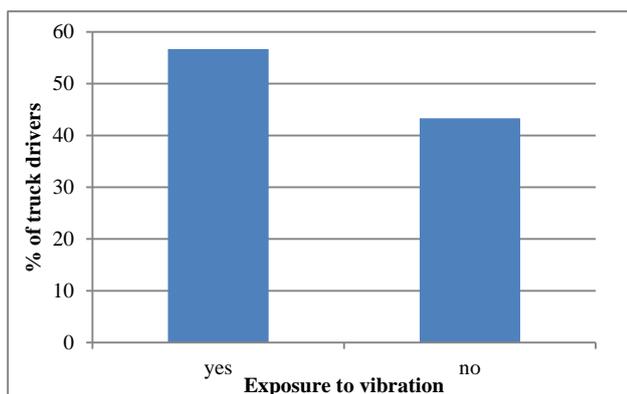


Figure 9: Exposure to vibration during driving.

56.66% reported having experienced as truck vibrations as distressing while the remainder 43.33% did not have any complaints regarding truck vibrations. Whole body vibrations are found to be a significant causative risk factor for musculoskeletal pain and discomfort.

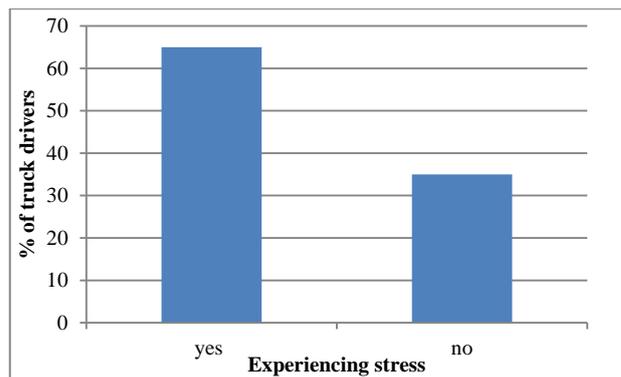


Figure 10: Experiencing stress.

65% of participants reported having been experiencing stress due to work duration and catering demands and meeting deadlines for delivery of goods, while 35% did not complain of any stress. This limiting factor can be overcome by reducing the constraints of time on delivery of goods for the truck drivers to alleviate their stress.

DISCUSSION

In this study we tried to gain insight of the prevalence of work related musculoskeletal pain in truck drivers and its associated risk factors. A closed ended questionnaire was designed which incorporated the modified Nordic questionnaire and numeric pain rating scale. The questionnaire included questions regarding demographic data, driving details, posture related factors, pain assessment, factors responsible for their pain and posture while driving.

Truck drivers are involved in prolonged duration of driving, the low back pain experienced by truck drivers is due to driving for many hours in an unchanged posture, having to be exposed to whole-body vibration that does not allow them to adopt an optimum posture together with poor ergonomics of the truck. If this posture is maintained for a prolonged period of time then, it results in pain and discomfort in several joints such as neck, shoulder, back and knee. It is considered that long working time or experience increases the risk of LBP because occupational exposure time and occupational impact have a negative effect.¹

Our study has recorded a musculoskeletal disorder prevalence rate of 76.92%. In a study by Mozafari in Iran found a prevalence of work related musculoskeletal disorders in truck drivers to be 78.6%. He concluded that more work-related musculoskeletal injury in drivers are due to repetitive movements, heavy physical and prolonged static load, forceful exertions, psychological work stress & whole-body vibration. Also, upper limb discomfort is the result of the posture of arms and neck, force, hand–arm vibration repetitive upper-limb activity.¹

A total of 91 truck drivers were approached of which 78 participated in the study. Due to lack of knowledge &

negligence, 10 truck drivers refused to participate in the study & 3 were excluded since they did not meet the inclusion criteria. Of which 60 participants complained of having work related musculoskeletal pain and 18 participants did not complain of any work-related musculoskeletal pain.

Out of 78 participants, 48.33% reported driving of more than 12 hours and 33.33% reported driving for 8-12 hours. These results can be attributed to the work load experienced by truck drivers, catering demands and meeting deadlines to transport goods. Prolonged duration of driving hours has been found to be one of the major risk factors for musculoskeletal pain.²

In a study conducted by Troup, suggested that whole body vibration, sustained postures and transmitted road shocks do play an important role in the causation of work related musculoskeletal discomfort.³

Out of 78 subjects, 86.66% of the participants reported the cause of their posture as the poor quality of roads. 56.66% participants reported their type of posture to be initially straight, later slouched. In a study conducted by Miyamoto many drivers pointed out towards vibration and road shocks to be responsible for their musculoskeletal pain. 65% of the truck drivers reported to have been experiencing stress due work-related deadlines, poor quality of roads and traffic jams. Stress is a very commonly known factor for work related musculoskeletal pain.⁴

In this study the number of years of driving seems to have a significant contribution to the percentage of work related musculoskeletal pain which is 46.66% for the truck drivers driving for more than 15 years. Lack of resting hours at night/lack of sleep also seems to be a contributing factor for musculoskeletal pain as it is clearly reported by 41.66% of the participants in this study that rest relieves their pain and 38.33% of the drivers reported to be sleeping only for 3 hours & 4 hours (33.33%).

Work related musculoskeletal pain appears to have been taking a toll on the life of truck drivers as it is seen in this study, 55% drivers took sick leave in 12 months, 65% of the participants had seen a physician in past 12 months and 80% of the participants had trouble in work due to work related musculoskeletal pain in last 7 days. In a study conducted by Miyamoto suggests that factors contributing for musculoskeletal pain are working conditions inconvenient duty time, short duration of rest and long duration of driving.⁴

Out of 78 participants in this study, 73.33% participants reported to have low back pain. Sitting position has been considered as one of the major risk factors for developing LBP. Many authors have reviewed the risk between whole body vibration and low back pain.^{5,6} Out of 78 participants 46.66% reported to have been driving truck

for more than 15 years. It is documented that a greater number of driving years can add to musculoskeletal pain problems as seen in a study by Bhaumik which concluded that age along with years of driving experience play an important role in the causation of low back pain.⁶ Awkward sitting postures while driving have been regarded as risk factors for low back pain.⁷⁻¹² Followed by knee pain (53.33%), which can be attributed to the repeated use of clutch and accelerator.

Shoulder pain which was reported by 30% of the participants and neck pain which was reported by 28.33% of the participants which can be caused by rounded shoulders and forward head posture. Thus, it appears that all the above-mentioned factors seem to play a role in the contribution of work related musculoskeletal disorders in truck drivers.

CONCLUSION

In this study the prevalence rate of work related musculoskeletal disorders in truck drivers was found to be 76.92%. The most commonly affected joints are lower back followed by knee, shoulder and cervical spine.

The factors which are found to be responsible for work related musculoskeletal pain in truck drivers are age, years of driving, number of driving days in a week, number of driving hours in a day, rest duration, posture, stress, vibration & poor condition of roads.

It can be concluded from the results of this study that extrinsic factors do play a significant role in the causation of work related musculoskeletal pain in truck drivers and is a leading cause for affecting health of truck drivers and a frequent cause of sickness absenteeism.

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