



Musculoskeletal pain in block lifters using Extended Nordic Musculoskeletal Questionnaire (NMQ-E)

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Abstract

Background: Block lifting is a physically demanding occupation that involves repetitive heavy lifting, bending, twisting, prolonged standing, and working in awkward postures. These physical demands may place excessive stress on different parts of the body and increase the risk of musculoskeletal pain. Despite the physical demands associated with block lifting, limited research has specifically examined the prevalence and distribution of musculoskeletal pain among block lifters.

Objective: To assess musculoskeletal pain in various body regions (neck, shoulders, upper back, lower back, knees, etc.) among block lifters using the Extended Nordic Musculoskeletal Questionnaire (NMQ-E).

Methodology: A cross-sectional study was conducted among 237 male and female block lifters working at various construction sites in Navi Mumbai. Participants were aged between 18–45 years and were selected using purposive sampling. Participants working for 7–8 hours and having at least six months of construction experience were included. Musculoskeletal pain was assessed using the Extended Nordic Musculoskeletal Questionnaire (NMQ-E). The responses were coded as Yes = 1 and No = 0. Data were analysed using descriptive statistics, and results were expressed as frequency and percentage, along with mean $\pm$ standard deviation for age.

Results: The findings showed that 54.9% (130/237) of the block lifters reported musculoskeletal pain, while 45.1% reported no pain. The lower back had the highest prevalence of pain (20.3%), followed by the neck (19.0%), knee (7.2%), shoulder (4.2%), and upper back (4.2%). Among the symptomatic workers, 100% reported trouble in the last 12 months, 90% reported trouble in the last month, and 83.8% had symptoms on the day of assessment. Normal work was affected in 86.5% of symptomatic workers, while 30.8% reported taking sick leave.

Conclusion: The study concludes that musculoskeletal pain is common among block lifters, with the lower back and neck being the most frequently affected body regions. The findings also demonstrate that musculoskeletal pain can interfere with normal work and contribute to sick leave and changes in occupation. Preventive strategies such as ergonomic education, proper lifting techniques, regular rest breaks, strengthening and exercise programmes, and early physiotherapy intervention may help reduce musculoskeletal pain and its impact on work among block lifters

Keywords: Block lifters, musculoskeletal pain, occupational health, Extended Nordic Musculoskeletal Questionnaire, NMQ-E and Prevalence

Introduction

Musculoskeletal disorders (MSDs) are defined as injuries involving the muscles, nerves, tendons, joints, cartilage, or spinal discs, while work-related musculoskeletal disorders (WMSDs) are described as conditions in which the work environment and the manner in which tasks are performed significantly contribute to their development.^[1]

Musculoskeletal pain is one of the most common work-related musculoskeletal disorders, often leading to reduced productivity, absenteeism, and long-term disability among manual laborer.^[1]

According to World Health Organization (WHO), musculoskeletal disorders are the highest contributor to the global need for rehabilitation and it is the condition that often co-exists with non-communicable diseases and the mental health issues.^[2]

It has been demonstrated that the burden of WMSDs in India remains among the highest in Asia, largely due to informal working conditions, insufficient safety training, and minimal access to occupational health services.^[2]

The prevalence of musculoskeletal pain among construction workers has been reported to significantly influence their quality of life, with persistent discomfort often leading to

functional limitations and reduced physical activity levels.^[2]

Block lifting is a physically demanding occupation that requires repetitive heavy lifting, bending, twisting, and maintaining awkward postures for prolonged periods. These biomechanical stresses place excessive strain on various body regions particularly the neck, shoulders, back, and lower limbs making block lifters highly susceptible to musculoskeletal disorders (MSDs). Similar to other construction-related occupations, this repetitive workload can lead to both acute injuries and chronic musculoskeletal pain.^[2]

Poor ergonomic practices such as improper lifting techniques, absence of mechanical aids, and inadequate rest breaks significantly contribute to MSDs prevalence among manual labourers.

Environmental conditions like uneven surfaces, high temperatures, and lack of safety supervision further aggravate the physical strain.^[3]

Beyond individual health, MSDs in block lifters have wider socioeconomic implications.

Persistent pain leads to decreased work efficiency, increased medical costs, and loss of income.

For employers, these injuries translate into productivity loss, higher compensation claims, and workforce turnover. The cumulative effect weakens both worker welfare and overall industry sustainability. [4]

It has been proposed that regular ergonomic assessments, job rotation, and the introduction of mechanical lifting aids can substantially lower the risk of musculoskeletal strain in block lifters. [4]

The significance of early detection of musculoskeletal symptoms has been highlighted, as timely intervention has been associated with a reduction in chronic pain progression and improved occupational longevity. [5]

The Extended NMQ is a standardized and validated tool widely used to assess musculoskeletal symptoms across body regions and their impact on daily activity. Employing this questionnaire enables systematic evaluation of pain prevalence, severity, and work-related limitations among block lifters. The findings from such research can guide evidence-based strategies to enhance workplace safety, worker health, and productivity. [7]

Methodology

This study adopted a cross-sectional study design and was conducted among block lifters working at construction sites in Navi Mumbai. A convenience sampling method was used to recruit participants. A total sample size of 237 male and female block lifters was included in the study.

Participants were included if they were male or female block lifters aged between 18 and 45 years and were involved in block-lifting activities at construction sites. Participants were excluded if they were unwilling to participate or had any condition that could affect the assessment of musculoskeletal pain, as per the study's exclusion criteria.

Prior to participation, informed consent was obtained from all participants. Demographic details were collected using a structured case record form. Work-related musculoskeletal symptoms were assessed using the Extended Nordic Musculoskeletal Questionnaire (NMQ-E). The questionnaire was used to identify the presence and distribution of musculoskeletal pain in different body regions and its impact on work-related activities.

All collected data were recorded systematically and analyzed using descriptive statistical methods to determine the prevalence and distribution of work-related musculoskeletal pain among block lifters in Navi Mumbai.

Data Analysis and Results

Data entry, validation, and simple descriptive statistical analysis were all done using Microsoft

Excel and SPSS (version 26). Descriptive statistics were used to describe participant characteristics. Continuous data was summarized using mean $\pm$ standard deviation, median, and interquartile range, while categorical variables were expressed using frequency and percentages.

Study population: 237 block lifters (male and female).

Age: 31.8 ± 6.3 years

Table 1: Demographics Mean Age $\pm$ SD (years)

Body Region	Mean Age $\pm$ SD (years)
Lower Back	32.1 ± 6.5
Neck	32.1 ± 5.7
Knee	38.5 ± 3.4
Shoulder	35.1 ± 5.2
Upper Back	31.9 ± 4.8
No Pain	30.1 ± 6.1

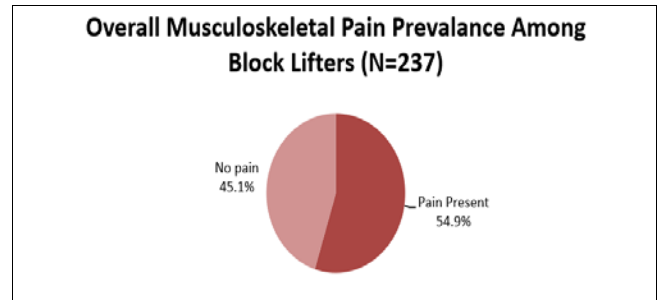


Fig 1: Overall musculoskeletal pain prevalence among block lifters (N=237).

- Fig 1 shows that musculoskeletal pain was present in 54.9% of the participants, while 45.1% reported no pain.
- This indicates a substantial burden of musculoskeletal symptoms among block lifters.

Table 2: Prevalence of Musculoskeletal Pain by Body Region.

Body Region	n	Prevalence (%)	Mean Age $\pm$ SD (years)
Lower Back	48	20.3	32.1 ± 6.5
Neck	45	19.0	32.1 ± 5.7
Knee	17	7.2	38.5 ± 3.4
Shoulder	10	4.2	35.1 ± 5.2
Upper Back	10	4.2	31.9 ± 4.8
No Pain	107	45.1	30.1 ± 6.1

Table 2 Distribution of musculoskeletal pain by body region and mean age of participants.

- Lower back was the most commonly reported painful body region, affecting 48 participants (20.3%), followed by the neck in 45 participants (19.0%).
- Knee pain was reported by 17 participants (7.2%), while shoulder and upper back pain were each reported by 10 participants (4.2%).
- A total of 107 participants (45.1%) reported no musculoskeletal pain.
- The mean age was highest among participants reporting knee pain (38.5 ± 3.4 years), while the mean age of participants with lower back and neck pain was 32.1 ± 6.5 and 32.1 ± 5.7 years, respectively.

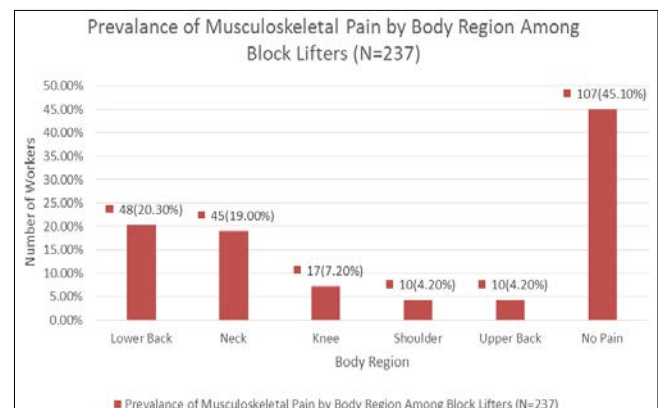


Fig 2: Prevalence of musculoskeletal pain by body region among block lifters (N=237).

- Fig 2 demonstrates that the lower back and neck were the two most frequently affected regions.

- The lower back accounted for 20.3% of the total sample and the neck for 19.0%, indicating that these regions represented the principal sites of musculoskeletal symptoms.

Table 3: Impact of Pain (among the 130 symptomatic workers.

Indicator	Percentage
Trouble in last 12 months	100%
Consulted a doctor	100%
Took medication	99.2%
Trouble in last month	90.0%
Trouble present today	83.8%
Normal work affected	86.5%
Took sick leave	30.8%
Changed job due to pain	10.0%
Hospitalised	1.5%

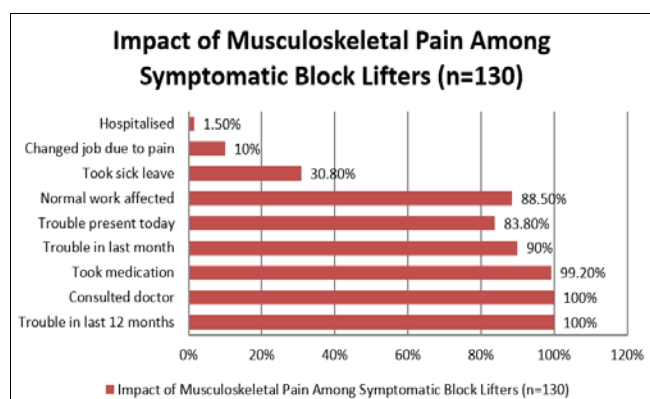


Fig 3: Impact of musculoskeletal pain among symptomatic block lifters (n=130).

- Fig 3 indicates that musculoskeletal pain had a considerable occupational and functional impact.
- The highest reported consequences were persistent symptoms, healthcare consultation, medication use, and interference with normal work.
- The findings also show that a notable proportion of symptomatic workers required sick leave.

Table 4: Site-Specific Work Impact

Body Region	Work Affected (%)	Sick Leave (%)	Changed Job (%)
Lower Back	100.0	45.8	14.6
Neck	73.3	15.6	6.7
Knee	100.0	35.3	5.9
Shoulder	70.0	20.0	20.0
Upper Back	100.0	30.0	0.0

Table 4 Site-specific occupational impact among symptomatic block lifters.

- Lower back, knee, and upper back pain were each associated with work interference in 100% of the affected participants.
- Lower back pain demonstrated the highest proportion of sick leave (45.8%) and the highest proportion of job change due to pain (14.6%). Neck pain affected normal work in 73.3% of affected participants, while 15.6% required sick leave and 6.7% reported changing their job.

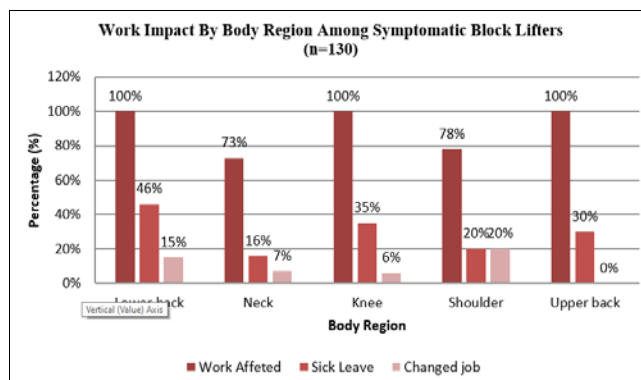


Fig 4: Work impact by body region among symptomatic block lifters (n=130).

- Fig 4 shows that lower back pain produced the greatest overall occupational burden, particularly in relation to sick leave and job change.
- These findings suggest that lumbar symptoms may have a greater effect on work continuity among block lifters than pain at other assessed sites.

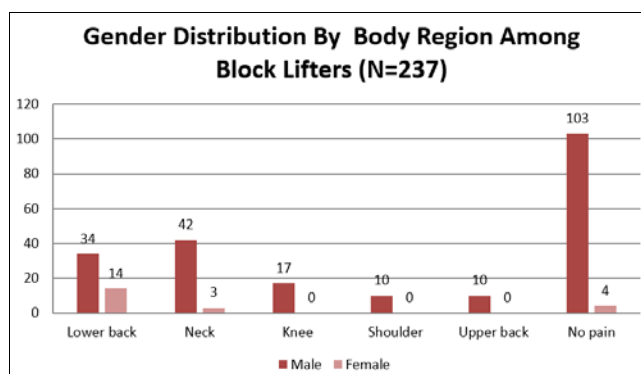


Fig 5: Gender distribution by body region among block lifters (N=237).

- The gender distribution indicates a greater number of symptomatic male workers than female workers.
- This observation should be interpreted in the context of the gender composition of the study population rather than as evidence of an independent effect of sex on musculoskeletal pain.

Discussion

The present study evaluated how much work related pain block lifters deal with from their jobs using the Extended Nordic Musculoskeletal Questionnaire (NMQ-E) among 237 block lifters. The findings demonstrate that musculoskeletal pain is a problem for these workers and a major health concern.^[7]

Out of all the people I studied 54.9% (130/237) of block lifters said they have pain. The other 45.1% said they do not have pain. This high number happens because block lifting is a physically demanding nature of the job.^[4] The block lifters have to lift blocks by bending, twisting and stand for a long time and work in bad positions.^[4] All these movements put a lot of stress on the body, which leads to pain and injuries.^[4] The most common site of pain was the lower back (20.3%). This was followed by the neck (19.0%), knee (7.2%), shoulder (4.2%) and upper back (4.2%). The lower back hurts the most because lifting and carrying concrete blocks puts so much pressure on the spine

as the biomechanics of manual material handling imposes excessive compressive and shear forces on the lumbar spine. [6] Also the neck pain comes from forward head and holding muscles tight while lifting the blocks. [4] The workers with pain were mostly between 31.9 ± 4.8 years and 38.5 ± 3.4 years old. The average age for block lifters in the study was 31.8 ± 6.3 years. Knee pain was more common in workers (38.5 ± 3.4 years) which might be because of years of hard work and age related degenerative changes. On the hand lower back and neck pain happen to younger workers too. This shows that the lower back and neck can get hurt early indicating vulnerable early repetitive mechanical loading. [4] All 130 workers with symptoms said they had pain in the last 12 months and consulted a doctor. Almost all of them (99.2%) took medicine for the pain. Also 90% had pain in the month and 83.8% were still in pain on the day I talked to them. This tells that musculoskeletal pain for block lifters is not just common it is also a problem. [5] The pain really affects their jobs. [1]

88.5% of the workers with symptoms said undergoes the pain while doing their daily activities. Also 30.8% had to take leave, 10% had to find a new job because of the pain and 1.5% had to go to the hospital. It is clear that musculoskeletal pain is prominently present to get the work done and how often people show up which is bad for the workers and the economy. [5]

Lower back pain caused the most sick leave (45.8%) and the most people changing jobs (14.6%). Shoulder pain also limited the work. This shows that lower back issues are painful part for block lifters to deal with. Gender wise analysis revealed men had more symptoms than the females as both the genders were studied. That is only because most of the block lifters included in the study were men. So the difference is because of workforce composition rather than an independent effect of sex on musculoskeletal pain. The findings are similar to studies on construction workers and manual material handlers. [5] Those studies also show that the lower back and neck are the areas mostly affected. [5]

People usually say this happens because of lifting, bad posture working too long without a break or not having machines to help lift. [4]

Overall this study shows that musculoskeletal pain is a substantial burden of musculoskeletal pain among block lifters and underscores the need for preventive health strategies. [1]

Teaching lifting ways, giving regular breaks, having exercise programs at work and getting help, from a physical therapist early could really help lower the amount of musculoskeletal pain these workers face. [5]

Limitations

1. The study was cross-sectional, as a result, so cause-and-effect relationship could not be established.
2. Factors like posture, workload, lifting techniques, or psychosocial factors were not studied in the research.
3. As the study was carried out at various construction sites in Navi Mumbai, its finding may not be same in other areas.
4. The severity of pain, disability, or any specific musculoskeletal diagnoses were not assessed in details.
5. Only descriptive statistics were used, so relationship between risk factors and musculoskeletal pain could not be determined.

Conclusion

The study found that many block lifters deal with musculoskeletal pain. 54.9% of the people in the study, which's 130 out of 237 participants had musculoskeletal pain. Most of these block lifters felt it in their lower back (20.3%). Other common spots for pain included the neck (19.0%) knee (7.2%) shoulder (4.2%) and upper back (4.2%). Looking at the block lifters who had symptoms 90% said they felt pain in the last month. Also 83.8% felt pain on the very day they were tested.

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