

“Prevalence Of Upper Thoracic Pain Among Low Wage Workers Due To Heavy Weight Lifting And It’s Risk Factors”

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Abstract:

Introduction: Back and neck pain in the workplace has long been identified as a major occupational health problem, but thoracic spine pain has rarely been assessed. Thoracic spine pain is defined as spinal pain extending from the cervico thoracic hinge (C7-T1) to the thoraco lumbar junction (T12-L1). Low wage workers mainly involve in unskilled work consisting of lifting heavy loads, carrying heavy loads, climbing ladders and so on. These work tasks put workers at high risk for acute and cumulative thoracic spine disorders causing pain.

Objective: The main objective is to find the prevalence of upper thoracic pain among low wage workers due to heavy weight lifting and its risk factors.

Methods: Based on inclusion and exclusion criteria 80 subjects were selected for the study with random sampling, subjects has to fill the questionnaires about upper thoracic pain and vas scale and Oswestry disability index, and self made questionnaire on factors affecting thoracic pain.

Result: The subjects were assessed on the basis of questionnaire, VAS scale and Oswestry disability index (ODI) in which 80% of subjects had no problem (Frequency=64), and 20% had upper thoracic pain (Frequency=16).

Conclusion: There is low prevalence of upper thoracic pain i.e. 20%. Association of upper thoracic pain was significant with lifting of weight, type of pain, wherein constant pain was more common than intermittent pain.

Keywords: Upper thoracic pain, Low wage workers, Weight lifting

Date of Submission: 17-04-2024

Date of Acceptance: 27-04-2024

I. Introduction

Musculoskeletal disorders are injuries and disorders of the muscles, nerves, tendons, ligaments, joints, cartilage, and spinal disc¹. Back and neck pain in the workplace has long been identified as a major occupational health problem, but thoracic spine pain has rarely been assessed. Thoracic spine pain is defined as spinal pain extending from the cervico thoracic hinge (C7-T1) to the thoraco lumbar junction (T12-L1)². Pain experienced in thoracic spine can be equally disabling, potentially imposing similar burden on individual, community and workforce³. Low wage workers spend most of their working hours at the workplace. Their workplace environment is related directly to their health and well-being⁴. Workers who lift heavy weight on their back are prone to painful musculoskeletal strains and injuries because of their laborious and strenuous manual jobs⁵. The pain severity is aggravated by their harsh working environment, which is associated with irregular working hours, unstructured mealtimes, tough and dusty work⁶. According to **Telaprolu N et al**, Low wage workers mainly involve in unskilled work consisting of lifting heavy loads, carrying heavy loads, climbing ladders and so on. These work tasks put workers at high risk for acute and cumulative thoracic spine disorders causing pain..According to Grimmer K et al⁷ limited research on prevalence and risk factors for thoracic spine pain likely reflects the belief that the clinical and public health significance of thoracic spine pain is less compared to other spinal levels. Nonetheless, it has been argued that thoracic spine pain should be considered as a discrete and important clinical entity, independent of pain experienced in other areas of the spine⁸, and particularly in youth where thoracic spine pain is common, disabling and has an increasing incidence with age during adolescence. . Other factors such as sleep problem, not doing regular physical exercise, pulling and pushing heavy loads, bending and working with twisted trunks, alcohol consumption and lack of rest were also noted to be predictors of thoracic spine pain⁹. Frequent material handling activities found in construction work environments put substantial stress on the neck, shoulder, and upper back resulting in pain and discomfort. Manual material handling is a work activity associated with a large number of upper back injuries and considered as a high risk activity upper back pain. The health of these workers is an important issue

that needs to be addressed for the development of the country. Here, we aimed to estimate the prevalence of thoracic spine pain among low wage workers who lift heavy weight on their back with associated factors (socio-demographic, lifestyle, occupational and psychosocial factors); and measures taken by workers to prevent and manage pain.

II. Material And Methods

- Number of Subjects: 80
- Source of data: Subjects working at different shops in Dehradun.
- Simple Random sampling

Inclusion criteria:

- Male workers.
- Age - 30-45 years of age.
- Working from last 6 years.
- Minimum working hours- 6 hours\day.

Exclusion criteria:

- Workers with a history of trauma\diseases.
- Workers who had undergone any operative procedure

Procedure

Subjects will be recruited from different shops as per inclusion and exclusion criteria. The method and procedure will be explained to the subjects. A written consent form will be signed by the subjects. All male subjects will be invited to participate.

Data was collected through a structured questionnaire by me in the local language (Hindi). Data has been filled by me and some by shop’s owner because most of the low wage workers were illiterate and not able to read and write. Survey was conducted inside or near the shops. It took about eight to ten minutes to complete the questionnaire.

The initial section in the questionnaire requested information regarding name, age, marital status, contact details etc. The another section includes information like number of years into the work and the number of hours per day. Participants were asked if they ever had any concern (pain, ache or discomfort) in upper thoracic region, In case of a positive reply to pain in upper thoracic region, they were asked details about duration of pain, cause of pain, how it starts, hospitalization due to pain, absenteeism from work, change of jobs due to pain etc. I used VAS scale to know the severity of the pain.

III. Result

Table 1: shows that the mean age of the participants was 35.47 ± 3.6 years. The enrolled participants were involved in this low wage work for duration of 12.48 ± 5.03 years. The participants worked for an average of 7.88 ± 1.03 hours per day.

	Minimum	Maximum	Mean	Std. Deviation
Age	30.00	45.00	35.4750	3.60019
Number of years into the work	6.00	27.00	12.4875	5.03907
Hours/Day	6.00	12.00	7.8875	1.03108

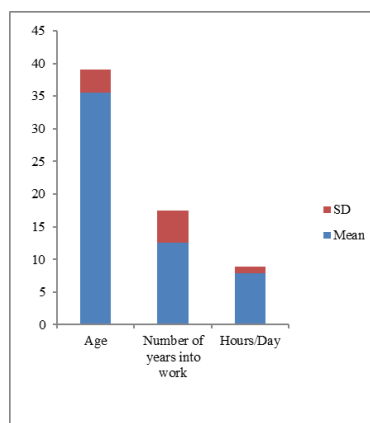
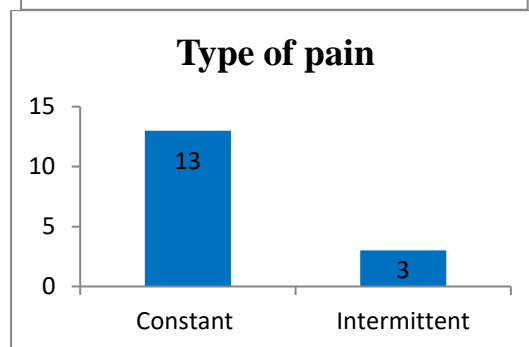
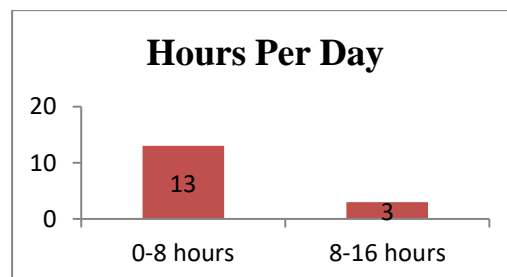


Fig 1 : Graphical representation of mean and standard deviation of Descriptive Analysis

Table 2 shows that results prevalence of upper thoracic pain was 20% (16 participants out of total 80 subjects). The results also revealed association of upper thoracic pain with lifting of weight which can be the cause of pain (p=<0.01). Association of upper thoracic pain was also seen with the factor that how the pain started (p=<0.01) and the type of pain (p=<0.01). The upper thoracic pain was not associated with hospitalization (p=0.007). Meanwhile, the association of upper thoracic pain was evident with the type of pain, wherein constant pain was more common than intermittent pain (p=<0.01). However, the association of upper thoracic pain was not evident with marital status, number of years into work and hours of working per day.

		Frequency	Percent	χ^2	Significance
Marital Status	Married	15	93.75	0.157	1
	Single	01	6.25		
Number of years into work	0-10 years	04	25	25.53	0.083
	10-20 years	09	56.25		
	20-30 years	05	31.25		
Hours per day	0-8 hours	13	81.25	6.821	0.338
Cause of Pain	History of trauma	03	18.75	80	<0.01*
	Lifting of Load	13	81.25		
How pain started	Gradually	08	50	80	<0.01*
	Suddenly	08	50		
Type of pain	Constant	13	81.25	80	<0.01*
	Intermittent	03	18.75		
Hospitalization because of pain	Yes	03	18.75	12.468	0.007*
	No	13	81.25		
Change of work because of pain	Yes	0	0	-	-
	No	16	100		
Pain becomes worse at night	Yes	09	56.25	40.56	<0.01*
	No	07	43.75		
Weight lifting is major cause of pain	Yes	12	75	56.47	<0.01*
	No	04	25		



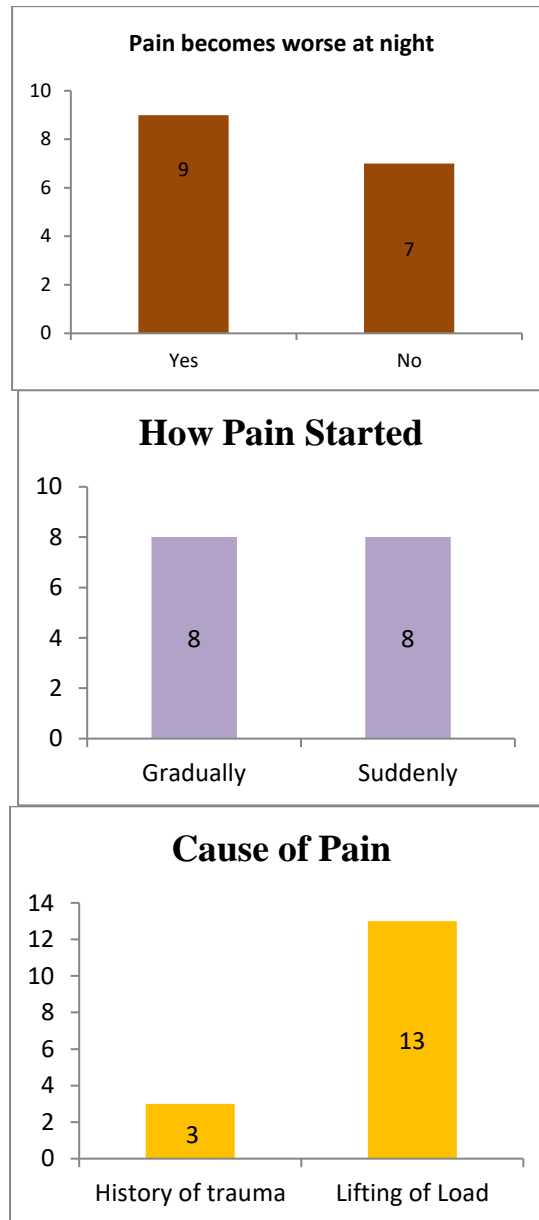


Figure 2 shows that prevalence of upper thoracic pain in low wage workers due to heavy weight lifting with various significant factors

IV. Discussion

The present survey was done to find the prevalence of upper thoracic pain in low wage workers due to heavy weight lifting. In this; total 80 participants were selected who met the inclusion criteria. The results revealed that the prevalence of upper thoracic pain was 20% (16 participants out of total 80 subjects). The results also revealed association of upper thoracic pain with lifting of weight which can be the cause of pain. Association of upper thoracic pain was also seen with the factor that how the pain started and the type of pain. However, the association of upper thoracic pain was not evident with marital status, number of years into work and hours of working per day.

This survey done by Fouquet, on large population to find the prevalence of thoracic pain in both men and women which concluded that thoracic spine pain is less frequent than low back and neck pain, the results of this study indicate that 1 in 10 men and 1 in 5 women suffer from thoracic spine pain².

Compared to the lumbar and cervical spine, thoracic spine has received less attention in clinical and occupational research¹⁰. According to some researcher's pain experienced in thoracic spine can be equally disabling, potentially imposing similar burden on individual, community and workforce¹¹.

Another study done by Andrew³, to examine the incidence and risk factors for incident thoracic spine pain in workers representative of a French region's working population and found that the incidence rate of thoracic spine pain was 5.2 per 100 men and 10.0 per 100 women. Thoracic spine pain was often associated

with low back pain and neck pain. Thoracic spine pain thoracic spine pain in men was associated with age, being tall, frequent/sustained trunk bending, lack of recovery period or change in the task. TSP in women was associated with high perceived physical workload, after adjustment for confounding variables.

Another study did a systematic review method was followed to report the evidence describing prevalence, incidence, associated factors and risk factors for thoracic spine pain among the general population. Nine electronic databases were systematically searched to identify studies that reported either prevalence, incidence, associated factors (cross-sectional study) or risk factors (prospective study) for thoracic spine pain in healthy children, adolescents or adults. It concluded that thoracic spine pain is a common condition in the general population. While there is some evidence for biopsychosocial associations it is limited and further prospectively designed research is required to inform prevention and management strategies¹².

The pain severity is aggravated by their harsh working environment, which is associated with irregular working hours, unstructured mealtimes, tough and dusty work, and outdoor and indoor heat, etc. Low wage workers mainly involve in unskilled work consisting of lifting heavy loads, carrying heavy loads, climbing ladders and so on. These work tasks put workers at high risk for acute and cumulative thoracic spine disorders causing pain⁷.

The health of these workers is an important issue that needs to be addressed for the development of the country. Low wage workers spend most of their working hours at the workplace. Their workplace environment is related directly to their health and well-being.

Quality of life of low wage workers is very poor, low-wage workers face significant financial insecurity, low job security, unstable hours ,lack of knowledge ,unemployment, family responsibility etc. In other words, low wage workers not only make less money right now, but the low quality of many of their jobs diminishes their overall wellbeing and limits their upward economic mobility in the future¹³.

V. Conclusion

It has concluded that there is low prevalence of upper thoracic pain in low wage workers due to heavy weight lifting.

The results revealed that the prevalence of upper thoracic pain was 20%. The results also revealed association of upper thoracic pain with lifting of weight which can be the cause of pain. Meanwhile, the association of upper thoracic pain was evident with the type of pain, wherein constant pain was more common than intermittent pain.

References

- [1] Ghosh, Tirthankar "A Comparative Ergonomic Study Of Work-Related Upper Extremity Musculo Skeletal Disorder Among The Unskilled And Skilled Surgical Blacksmiths In West Bengal, India." *Indian Journal Of Occupational And Environmental Medicine*, Vol. 15, No. 3, Sept.-Dec. 2011, 127-132.
- [2] Fouquet, N.; Bodin, J.; Descatha, A.; Et Al Prevalence Of Thoracic Spine Pain In A Surveillance Network. *Occupational Medicine*, 65(2), (2015).122–125.
- [3] Briggs Am, Bragge P, Smith Aj, Et Al: Prevalence And Associated Factors For Thoracic Spine Pain In The Adult Working Population. *A Literature Review. J Occup Health* 2009, 51:177-192.
- [4] Brown, L.W.; Quick, J.C. *Workplace Health*. In *Encyclopedia Of Mental Health*, 2nd Ed.;Academic Press: Riverside, Ca, Usa, 2016; 387–394.
- [5] Akanmu, A.; Ojelade, A.; Bulbul, T. Reassigning Construction Laborers Based On Body Motion Analysis. In *Proceedings Of The 35th International Symposium On Automation And Robotics In Construction (Isarc)*, Berlin, Germany, 20–25 July 2018; Curran Associates, Inc.: Red Hook, Ny, Usa, 2018; Volume 35, 1–7.
- [6] Devereux, J.J.; Vlachonikolis, I.G.; Buckle, P.W. Epidemiological Study To Investigate Potential Interaction Between Physical And Psychosocial Factors At Work That May Increase The Risk Of Symptoms Of Musculoskeletal Disorder Of The Neck And Upper Limb. *Occup. Environ. Med.* 2002, 59, 269–277.
- [7] Telaprolu N, Lal B, Chekuri S. Work Related Musculoskeletal Disorders Among Unskilled Indian Women Construction Workers. *Natl J Community Med* 2013; 4(4): 658-61.
- [8] Grimmer K, Nyland L, Milanese S: Repeated Measures Of Recent Headache, Neck, Upper Back Pain In Australian Adolescents. *Cephalgia* 2006, 26:843-851.
- [9] Wami, Sintayehu Daba; Abere, Et Al Work-Related Risk Factors And The Prevalence Of Back Pain Among Low Wage Workers: Results From A Cross-Sectional Study. *Bmc Public Health*, (2019). 19(1), 1072.
- [10] Edmondston Sj, Singer Kp: Thoracic Spine: Anatomical And Biomechanical Considerations For Manual Therapy. *Man Ther* 1997, 2:132-143.
- [11] Briggs Am, Straker Lm: Thoracic Spine Pain In Youth: Should We Be Concerned? *Spine Journal* 2009, 9:338-33.
- [12] Roquelaure, Yves; Bodin, Julie; Ha Et Al Incidence And Risk Factors For Thoracic Spine Pain In The Working Population: The French Pays De La Loire Study. *Arthritis Care & Research*, (2014). 66(11), 1695–1702