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Morbidity Profile of Mathadi Workers of Iron and Steel Market in Mumbai

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Abstract | **Original Research Article**

Background: Mathadi is a 'Marathi' word means 'a person carrying a load of material either on his head or on his back to stack at the appropriate place. These include carrying, weighing, loading & unloading stacking. Musculoskeletal pain and other morbidities along with lower socio-economic status, poor nutrition, addictions and job insecurity affect adversely on health of workers. ***Aim:*** To study and compare addictions and morbidity among workers. ***Material and Methods:*** Cross-sectional comparative study was conducted among workers from Iron and Steel market.Exposed group consisted of workers, working in Iron and Steel market engaged in loading and unloading stacking. Unexposed group consisted of workers with light job in same market. ***Results:*** Study included 100 Mathadi workers exposed to iron and steel and 100 unexposed workers.Average age in exposed and unexposed group was 33 years and 35 years respectively.Among exposed and unexposed, 63% and 61% percent participants were addicted to tobacco respectively.Callosities, shoulder pain, upper back ache, blunt injuries, cut injuries and headache were specific to exposed group. ***Conclusion:*** Provision of periods of rest hour and adjustable backrest seats that provide support for the lumbar region can reduce musculoskeletal pain. Monitoring an occupational environment and periodical health check-up of the workers is also necessary to create awareness regarding the ill effects of occupational hazards.
Keywords: Ergonomics, Occupational health, Pre placement examination, Labour act.

INTRODUCTION

The Iron and Steel industry is a "heavy industry", hazards are inherent because of massive equipment, giant plants, and movement of heavy masses of materials [1]. Mathadi is a 'Marathi (language in Maharashtra, India) word means 'a person carrying a load of material either on his head (Matha) or on his back to stack at the appropriate place. These include carrying, weighing, loading & unloading stacking, measuring or such other works [2]. International Labour Organization (ILO) has also taken a cognizance of this special Act and the Social Security given to the Mathadi workers [3]. There are about 5254 workers were registered in Mathadi Boards in Maharashtra, out of only 3347 are working[2].

The nature of work in iron and steel market is loading and carrying of materials like iron & steel rods, pipes, angles, railway rules & blocks and other instruments. Repeated cut injuries, blunt injuries, upper and lower back ache, neck pain, fractures & callosities are common morbidities in these workers. Lower socio-economic status, addictions and job insecurity further complicate this problem [4, 5].

Considering this, this study was planned to understand and compare addictions and morbidity pattern among exposed and unexposed group of workers in iron and steel market, Kalamboli which is a major hub of Mathadi workers.

MATERIALS AND METHODS

An observational, analytical, cross-sectional study was conducted among workers from Iron and Steel market at Kalamboli, Navi Mumbai, and Maharashtra. Study was conducted for the period of six months. Aim was to study and compare morbidity profile & addictions among exposed and unexposed workers. Exposed group was consisted of workers, working in Iron and Steel market engaged in loading and unloading stacking. Total 100 workers selected from exposed group with simple random sampling. Unexposed group was consisted of other workers engaged in maintaining attendance, distribution of work, carrying files, clerical job and other light job. Total 100 workers selected from unexposed group, which were comparable to exposed group workers in terms of years of working, socio-economic status, hours of working and environmental conditions of working and residential area. Inclusion criteria for exposed as well as unexposed group were, workers working for

minimum 5 years in iron and steel market with age between 20 to 60 years. Workers fall aside of these criteria and not willing to participate were excluded. Institutional Ethical Committee (IEC) permission was taken before data collection.

A written informed consent was taken from each worker before interview and clinical examination. Subjects were interviewed by using pre-tested semi-structured questionnaire having details about socio-demographic profile, economic status, addictions, hours of working, work experience, past illness and morbidities. A thorough general and systemic clinical examination was performed to find physical morbidities. Information about their emotional disturbances and stress was collected. Standard operational definitions and protocols were prepared and followed till end of study [6, 7].

Data collected was entered in Microsoft Excel and analysed with IBM SPSS software. Descriptive statistics like frequency, proportions, mean and standard deviation used. Tables were used to summarize results. Chi-square test with and without Yates correction was applied as an inferential statistics. P value <0.05 was accepted as significant.

RESULTS

This analytical cross-sectional conducted on 100 Mathadi workers exposed to iron and steel and 100 unexposed workers in Kalamboli market, Navi Mumbai. This study compared addictions and morbidity profile of exposed and unexposed workers. Appropriate statistical tests applied to analyse the result. Table no.1 depicts about age wise distribution of study participants. Average age in exposed and unexposed group was 33 years and 35 years respectively. In both groups, maximum workers were of age between 41 to 50 years. In exposed group minimum workers were of more than 50 years of age while in unexposed group lowest number reported from 21 to 30 years of age group. Considering nature of work and work conditions, all are males in both groups. There were no female worker in Mathadi iron and steel market.

Addictions among exposed and unexposed groups presented in table no. 2. Among exposed, 63% percent participants were addicted to tobacco. Fifteen percent were smokers and 48% were tobacco chewers. In unexposed, 35% were tobacco chewers and 26% were smokers. Thirty seven percent and 39% were not using any form of tobacco in exposed and unexposed group, respectively. This difference between two proportions was not statistically significant. Among Mathadi workers, 41% of exposed group were addicted to alcohol while 30% of unexposed were addicted to alcohol. This difference between two proportions was not statistically significant.

Morbidities among exposed and unexposed Mathadi workers have been shown in table no. 3 in decreasing order. Complaint profile of exposed workers depicted majority of musculoskeletal system affection (about 30%). Low back ache and knee pain were common complaints in exposed (10%; 5%) as well as unexposed (9%; 6%) group. Unexposed workers had musculoskeletal complaints about low backache and knee pain. Most exposed workers are suffering from callosities (27%). Most of the callosities were placed on shoulders and palms. Hypertension was more prevalent in unexposed group (7%) than exposed group (5%) but difference was not statistically significant. Next to this was blunt (7%) and cut (5%) injuries which were present only in exposed group. Headache (4%), emotional disturbances (3%) and acid peptic disease (2%) were found in Mathadi workers working in iron and steel market.

Tabl-1: Age wise distribution of exposed and unexposed workers

Age groups (years)	Exposed %	Not exposed %
21-30	23	16
31-40	27	24
41-50	40	36
>50	10	24
Total	100	100

Table-2: Addictions among exposed and unexposed workers

		Exposed % (n=100)	Not exposed % (n=100)	Statistical significance*
Tobacco use	Smoking	15	26	Not significant
	Chewing	48	35	
	Not using	37	39	
Alcohol use	Consuming	41	30	Not significant
	Not consuming	59	70	
*Chi-square test				

Table-3: Morbidities among exposed and unexposed workers

Morbidities	Exposed % (n=100)	Not exposed % (n=100)	Statistical significance*
Callosities	27	0	Significant
Low backache	10	9	Not significant
Shoulder pain	9	0	Significant
Upper backache	7	0	Significant
Blunt injuries	7	0	Significant
Cut injuries	5	0	Significant
Knee pain	5	6	Not significant
Hypertension	5	7	Not significant
Headache	4	0	Significant
Emotional disturbances	3	0	Not significant
Acid peptic disease	2	0	Not significant
*Yates corrected Chi-square test & uncorrected Chi-square test applied at appropriate place			

DISCUSSION

This comparative cross-sectional study was conducted among Mathadi workers in steel market and other workers having lighter job profile. Maximum number of participants was in the age group of 41 to 50 years in both exposed and unexposed group. Pandit *et al*. [8] reported highest number of cases from 35-40 years of age. In steel and iron market only male Mathadi workers were there. Due to kind of work and working conditions, no female worker was there. After 50 years of age, due to decrease in power and working capacity many workers left their jobs as Mathadi worker. Study done by Manjunath *et al*. [9] reported mean age of 55.1 years while in our study mean age was 33 and 35 years for exposed and unexposed group. Mean age of exposed group (43.7%) and unexposed group (38.6%) was reported by Johnson *et al.* [10].

Use of tobacco was almost same in exposed (63%) and unexposed group (61%). This might be due to common practice of tobacco use in market workers due to their literacy level, working conditions, stress and peer pressure. Chewing tobacco was common in exposed (48%) group than unexposed group (35%). Alcohol consumption was more common in exposed (41%) group than unexposed group (30%). It might be explained by common habit of alcohol consumption of workers to tackle the musculoskeletal pain and stress due to occupation. Illiteracy, low socioeconomic condition and ignorance could be possible factors. Both tobacco as well as alcohol use did not show statistically significant association between exposed and unexposed group. Study done by Johnson *et al*. [10] in steel foundry workers reported, 74.2% smokers in exposed group and 77.3% non-smoker in control group. Gurmeet *et al*. [11] reported 88% tobacco use and 22% alcohol use in their study.

One fourth of exposed workers suffered from musculoskeletal system affection. Heavy weights to lift as a part of job profile and short resting time might be possible reason. Low back ache was common in both exposed and unexposed group clearly indicative of harsh working conditions. Shoulder pain and upper back ache were found in exposed group due particular body posture required for job. Manjunath *et al*. [9] reported, 43.7% musculoskeletal problems in exposed group while 20.4% in unexposed group which is on higher side than our study (Exposed-30%; Unexposed-9%). Study done on ship scrapping workers in Bangladesh [12] and Gurmeet *et al*. [11] reported about 80% and 25% cases, respectively.

Callosities are the localised hyperplasia of the horny layer of the epidermis due to pressure or friction [13]. Shoulders, palms, soles and other sites were common body parts having callosities. This was due to frequent lifting of heavy objects on shoulders with help of palms and carries them for short distance to transport vehicle. Shahadat *et al*. [12] and Gurmeet *et al*. [11] reported 22% and 15% skin problems in their study which is lower than present study findings (32%) which include callosities and cuts. Stress related morbidities like headache; hypertension, emotional disturbances and acid peptic disease were common in exposed workers. Among unexposed workers low back ache, hypertension and knee pain were the morbidities. Manjunath *et al*. [9] reported 31% (exposed) and 21% (unexposed) gastric complaints which very high as compared to presents study due to different work environments. Shahadat *et al.* [12] also reported gastrointestinal complaints (20.83%) and headache (25%).

Hypertension now a days, becoming common problem in slum dwellers, daily wage workers and lower socioeconomic class population due unhealthy dietary practices and stress[14]. In our study, hypertension was prevalent in both exposed (5%) and unexposed group (7%). Study done in Nagpur in workers of steel industry reported 20% cases of hypertension [15]. Study done by Manjunath *et al*. [9] in Karnataka noted 24.4% (exposed-25.7%; unexposed-23.1%) cases of hypertension which is quite higher than our study. In present study, callosities, shoulder pain, upper back ache, blunt injuries, cut injuries and headache showed statistically significant association with exposed group.

In this study population, the variety of substance abuse and morbidities detected among Mathadi workers in iron and steel market as well as in other workers. The high prevalence of musculoskeletal and skin problems is alarming. Callosities, shoulder pain, upper back ache, blunt injuries, cut injuries and headache were specific to exposed group. Synergetic effect of the socioeconomic and lifestyle factors with the poor working conditions affects the health of the workers ultimately affecting work efficiency and productivity. Monitoring an occupational environment and periodical health check-up of the workers is also necessary to create awareness regarding the ill effects of occupational hazards [7]. Provision of periods of rest hour and adjustable backrest seats that provide support for the lumbar region can reduce musculoskeletal pain.

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