OCCUPATIONAL HEALTH PROBLEMS AMONG DOMESTIC WASTE COLLECTORS

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Abstract: Domestic Waste Collector's play an important role in keeping the buildings clean. They toil hard to perform their job of sweeping but the society has secluded them in terms of socio-economical and mental aspect. The present research had been undertaken with the objective to identify the prevalence of musculoskeletal pain among male domestic waste collectors. Cross sectional descriptive study was conducted among 60 male waste collectors from western suburban residential buildings from urban Mumbai city. A well-structured questionnaire and modified NMQ was used to collect data and study the musculoskeletal problems. The results showed that 58.33% male waste collectors were addicted to gutka, 55% were addicted to tobacco, pan and drinking and 48.33% were chain smokers. With regards to musculoskeletal problems experienced by them 91.67% male DWC's experienced pain in shoulder, 83.33% in arm, 76.67% in hand/wrist and 48.33% in upper back. The findings suggest suitable safety measures and ergonomic guidelines to improve the work and working conditions to be implemented at the earliest.

Index Terms - **musculoskeletal problems, male sweepers, safety measures, pain.**

I. INTRODUCTION

In India, residential building waste is collected manually and among all occupational health issues, musculoskeletal problems are amongst them because of the presence of risk factors like lifting, carrying, pulling and pushing. Domestic Waste Collectors (DWC's) come from disadvantaged community of society where they feel significant social exclusion and internally adopt belief of inferiority (Patwary MA, 2010).

Musculoskeletal disorders are injuries affecting muscles, bones, tendons, ligaments, and cartilage. Work-related musculoskeletal disorders (WMSDs) are multi-factorial in nature (Sarkar 2106). WMSDs result in disability, lost work time and increased production costs (Kirkhon 2010). They play an important role in causing health problems and affecting the quality of life. High incidence of work-related Musculoskeletal injuries is considered extremely important concern worldwide. Awkward working postures like bending, twisting, stooping attributes immensely towards these injuries. Residential building sweepers are also exposed to various physical factors at work like heavy lifting and repetitive motions. These physical work factors result in a higher risk for occupational injuries (Forde 2005).

A number of occupational factors in cleaning have been identified as being associated with MSDs. An important MSD risk factor found in professional cleaning is awkward working postures, which can result from minor back problems to severe handicaps (Kumar, R; Kumar S., 2005). Static postural load is frequent and, in particular, awkward working postures for the back and arms are common.

Domestic Waste Collection as a work job and employment, is specially thought and considered to be a menial one (Johncy 2013). The present study is conducted to assess the occupational health problems among male domestic waste collectors.

II. METHODOLOGY

The study was descriptive in nature and conducted on 60 male domestic waste collectors from western suburban residential buildings from urban Mumbai city using convenient sampling method. Waste Collectors between 18 – 60 years of age and had been sweeping for at least five years were selected for the study. A well – structured Questionnaire was developed to collect the necessary information followed by interview technique to elicit information on sweepers. Nordic Questionnaire Technique (Kuorinka I, Johnson B, Kilobom A, et al., 1987) was used for MSD problems. Data was analyzed using descriptive statistical methods & statistics SPSS -16.0. Ethics approval from the ethical committee of Seva Mandal Education Society was taken prior to carrying out study on residential sweepers.

III. RESULTS AND DISCUSSION

The demographic profile of the subjects with distinctive characteristics is shown in table 1.

Table 1. Demographic Profile of male domestic waste collectors

Variables	Males (n = 60)	Percentage %
Age Groups		
21 – 30	18	30
31 – 40	22	36.7
41 – 50	15	25
> 51	5	8.3

Table 1 shows maximum number of respondents were in age group of 31 to 40 and the mean age of male collectors was 37.33 years hence it is concluded that most of the respondents are adults and were carrying sweeping occupation for many years.
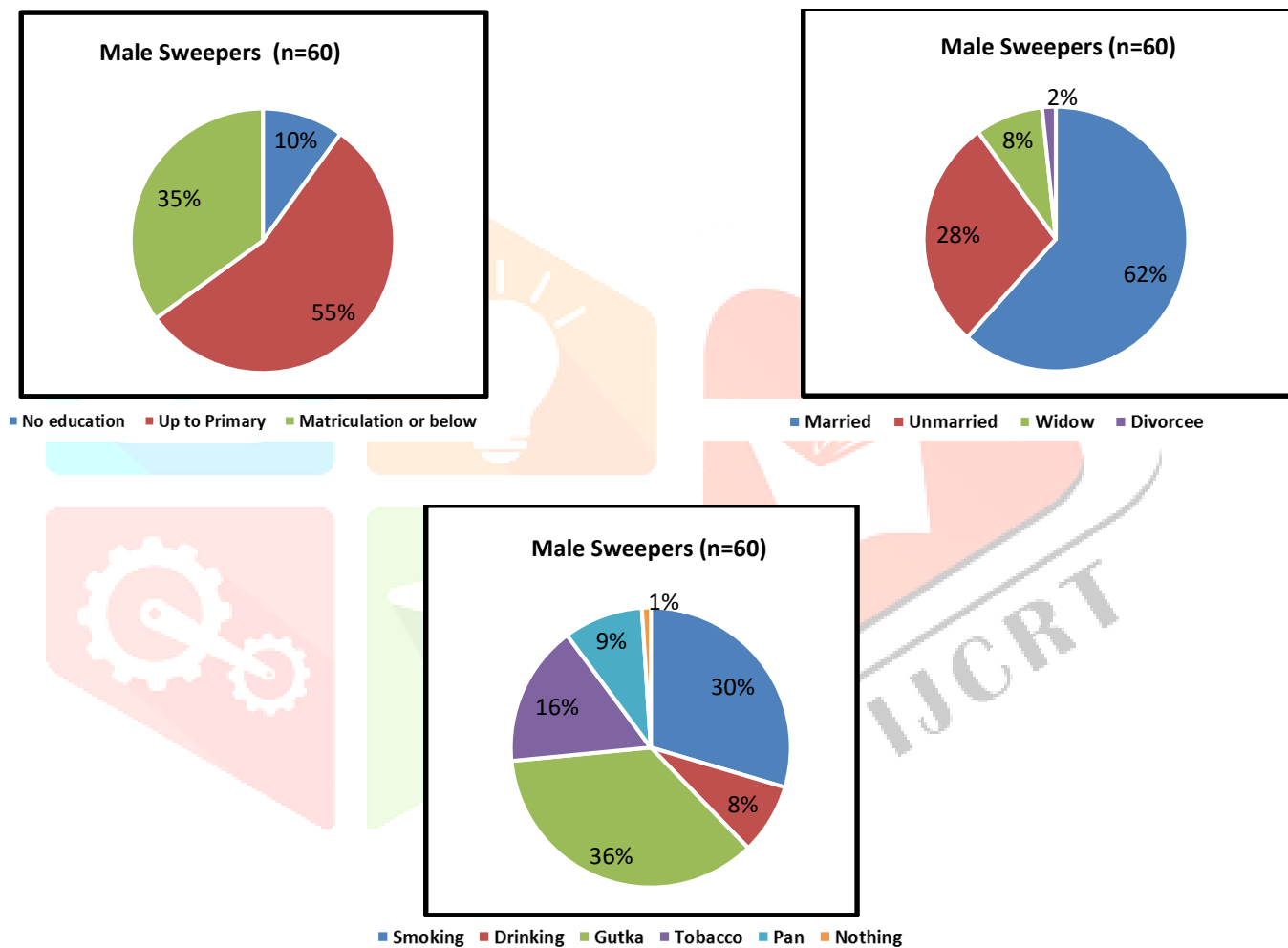

Fig 1. Demographic Profile of Waste Collectors

It can be seen from the above figure that 55% male domestic waste collectors had received education only up to primary level. The results of marital status showed that 62% were married. With regards to personal habits 58.33% male waste collectors were addicted to gutka, 55% were addicted to tobacco, pan and drinking and 48.33% were chain smokers.

Payal et al (2013) in a study on male construction workers found that the overall prevalence of tobacco use was 63.8% and that of alcohol use was 15.8%. The reasons underlying this may be low educational status, occupation involving hard labour, and poverty coupled with ignorance.

Similar findings were reported in a study by Lina & Baijayanti (2012) on 172 workers of garment industry to determine the prevalence of musculoskeletal and other health problems and to find out the association between musculoskeletal problems with occupational and socio demographic factors. 63.4% were in 15-44 years age group, addiction was noted in 73.8%. Musculoskeletal disorders were most prevalent (78.5%). Education, income and years, hours and nature of work had significant (P<.05) association with musculoskeletal problem.

Table 2. Socio-economic status of domestic waste collectors

Sr No	Parameters	Males Residential Waste Collectors			
		$\bar{x}$	SD	Min	Max
1.	Years of Experience	9.2	3.41	5	20
2.	Salary (Per month)	4236.66	441.47	3500	5000
3.	No. of earning members	2.3	0.74	1	3
4.	No. of Dependents	3.57	0.83	1	5

It is observed from the above table that the average salary of male domestic waste collectors was Rs. 4237/- with nine years of working experience. On an average there were 2 earning members and 4 dependents in the family.

The study also included the information on deduction of salary for the leave taken by residential sweepers which is presented in figure 2
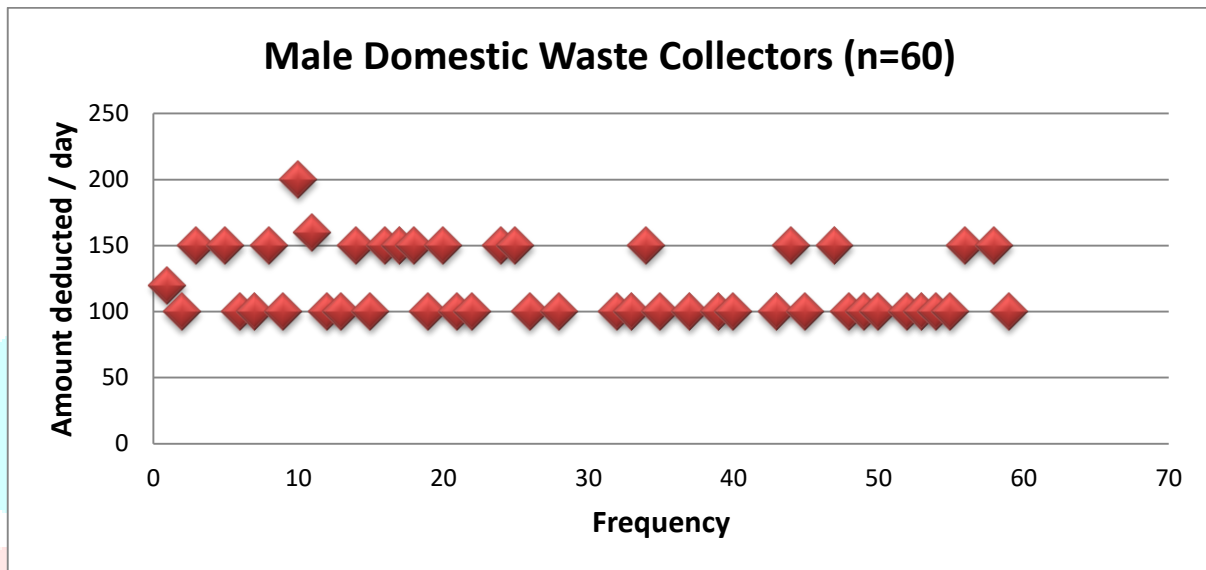

Fig 2: Deduction of Salary for the leave taken by Domestic Waste Collectors

It is observed from the above figure that the average deduction of salary for male waste collectors was Rs. 120/-. It was also evident that 23% of male domestic waste collectors never took leave from their work.

In a study by Andrade & Tubeza, 2012, it was reported that a street sweeper who was under open ended contract could earn only as much as ₱5,100 (Rs. 7529.75) per month for a daily rate of ₱255 (Rs. 376.49) that is if they were to work 20 days in a month. In as much as their lives are impoverished, working in a street is a no choice at all compounded by various socioeconomic factors such as poverty and lack of education.

Time study was done of the male waste collectors to find out the time spent on travelling to work place and mode of travelling. Table 3 represents the time spent on different modes of travel to work among male domestic waste collectors.

Table 3. Time spent on different modes of travel to work (n=60)

Mode of travelling	Frequency	Percent	Average Time	Min Time	Max Time
Bus	1	1.7	40 Min	40 Min	40 Min
Bike	2	3.3	20 Min	20 Min	20 Min
On foot	54	**90**	27 Min	10 Min	60 Min
Cycling	3	5	20 Min	20 Min	20 Min

The above table on time spent by the domestic waste collectors on travelling and mode of travelling indicates that majority of the waste collectors i.e., 90% travelled on foot to work. The other mode of travel used by them was bus, bike and cycling. It was also observed from the above table that the maximum amount of time spent was on foot i.e., 60 mins, by bus was 40 mins and that on bike and cycle was 20 mins respectively.

The table below describes the occurrence of pain amongst the male domestic waste collectors.

Table 4: Occurrence of pain amongst the male domestic waste collectors

Body Parts	Pain	
	Frequency	*%*
Eye	1	1.67
Neck	17	28.33
Shoulder	**55**	**91.67**
Upper Back	**29**	**48.33**
Elbows	2	3.33
Lower Back	24	40.00
Arm	**50**	**83.33**
Hand/ Wrist	**46**	**76.67**
Thighs	3	5.00
Knees	4	6.67
Calf of legs	25	41.67
Feet/Ankle	14	23.33

The above table shows a prevalence of pain in different body parts. The data supports the fact that the 91.67% male domestic waste collectors experienced pain in shoulder, 83.33% in arm, 76.67% in hand/wrist and 48.33% in upper back respectively.

Pintakham 2016 reported that the top three prevalence rate of musculoskeletal discomfort in the past 7 days were 84% in the wrists/hands, 81.3% in shoulders and 69% in the neck among street sweepers in Thailand.

Abou Elwafa.et al., 2012 conducted a study to assess the percentage of musculoskeletal disorders and their possible risk factors among Municipal Solid waste Collectors in Mansoura, Egypt. Low back was the most frequently affected body region among MSW collectors.

Similarly, in a study on manual workers in Calcutta by Sarkar 2016, ninety five percent of workers reported an MSD in at least one body part in the past 12 months. In a study by Neeraja 2014 on construction workers showed that distal upper limb MSDs were related to manual handling, work repetitiveness, psychosocial demands, job dissatisfaction and gender. Neck, shoulder or upper back MSDs were related to manual handling, work repetitiveness, psychosocial demands, job dissatisfaction and physical unfitness.

IV. CONCLUSION

Domestic waste collectors carry out the job of sweeping manually and suffer from occupational health issues and primarily suffer from musculoskeletal problems due to the presence of risk factors like bending, lifting, carrying, pushing, pulling and repetitive nature of job. The socio-economic status of these domestic collectors is low and their working conditions are unfavorable. It is therefore evident that an intervention study with modified tool to avoid awkward posture adopted during the sweeping activity needs to be implemented. More attention needs to be given on training program, regular medical checkups and increase in the salary which will positively impact the life of this vulnerable section of the society.

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