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Sociodemographic and health profile of construction workers of Central India: A cross sectional study

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Abstract

Background: Occupational hazards contribute to morbidity and mortality of millions of people worldwide and result in the ill health or disablement of hundreds of millions more each year. Working on a construction site or even being in the surrounding areas of where construction work is being done can be very detrimental to the human body. So the rationale of this study is to understand the sociodemographic and health profile of the construction workers.

Methodology: Cross sectional study was carried out at construction site in Central India between August 2014 to July 2015. Sample size was 335, total 350 workers in selected construction sites were enrolled in the study for analytical purpose.

Results: In the study 252 (72%) were male and 98 (28%) were female construction workers. Mean age of the study subjects was 28.40 ± 9.25 years. Maximum 257 (73.42%) were Hindu, 219 (62.57%) were married. Socioeconomic status of 168 (48%) of the study subjects was class III. 177 (50.57%) were unskilled workers. Most prevalent morbidities found to be Musculoskeletal and connective tissue disorder 19.43% followed by respiratory morbidities.

Conclusions: Total 350 construction workers were part of the study and no construction worker was below 14 years of age. Most prevalent morbidities was musculoskeletal (19.43%) followed by respiratory (18%), digestive (10%), circulatory (9.43%), skin (8.29%), Injuries (6.28%) and eye and adnexa (1.43%). Statistical significant difference was seen in educational status, category of workers and gender. Also morbidities such as respiratory, circulatory, skin and injuries are found to be statistical significant with category of workers.

Keywords: Construction workers, cross sectional study, occupational hazards, health profile, skilled workers and morbidity

Introduction

Construction workers face an inherent risk to life or vital body parts due to occupational hazards.(1) Occupational hazards contribute to morbidity and mortality of millions of people worldwide each year.(2) Recent industrialization and globalization are changing the Indian occupational morbidity drastically.(3) Construction workers are the backbone of the economy as they create the infrastructure necessary for industrial growth.(4) These laborers are engaged in huge industrial constructions, residential and commercial apartments, road constructions, hotel constructions, pool and bridges and infrastructure facility works.(5) Workers on a construction site may be exposed to various hazardous substance and physical agents e.g. asbestos, lead, silica dust, organic solvents, sewer gases,

welding fumes, radiation, noise and vibration. Excessive exposures to these agents may result in acute injury, chronic illness, permanent disability or even death. Loss of concentration at work and fatigue arising from poor health conditions may increase the risk of accidents.(6) Working on a construction site or even being in the surrounding areas of where construction work is being done can be very detrimental to the human body. It can have serious consequences on the people who choose or sometimes have no choice other than making their living from the construction industry.

Objective

To study the socio-demographic and health profile of construction workers of Central India.

Materials And Method

Cross sectional study was carried out at construction site in Central India between August 2014 to December 2016. Out of 149 registered apartment development projects by Town and planning department projects, construction sites were selected by simple random sampling technique. Study subjects were construction workers from the selected construction sites with informed consent were included while administrative staff like Project managers, deputy managers and clerical staff were excluded from the study. Sample size derived from a study conducted by Adsul BB et al (2011)[7] where the most common morbidity was acute febrile illness which amounted for 23.11%. Considering absolute error 5% and 97% confidence interval, sample size came to be 335. Total 350 workers in selected construction sites were enrolled in the study.

Predesigned pretested semistructured questionnaire was used for data collection. In sociodemographic characteristics, age group, sex, religion, marital status and migration were as per Census of India Meta Data 2011.(8) Educational status of the study subjects were classified as per Indian standard of classification of education.(9) Socio economic status were classified as per Modified B.J. Prasad scale for All India Consumer Price Index (AICPI) of December 2015.(10) Further workers were categorized into unskilled, semiskilled and skilled as per definitions given by Ministry of Labour and employment, The Gazette of India: Extraordinary and Minimum Wages Act.(11,12) A complete clinical examination of all subjects was done which included general examination and thorough systemic examination of respiratory, cardiovascular, abdominal and central nervous system. Blood pressure of the subjects was recorded using mercury sphygmo-manometer (Diamond- 112 APR 13 05837) by auscultatory method.(13,14) Statistical analysis was done using Open epi info software where quantitative variables were expressed in mean, standard deviation, frequency and percentages. Chi square test was used as test of significance with P value < 0.5 was considered as significant. Approval from the Institutional Ethics Committee was sought before the start of study.

Results

Table 1 : Distribution of study subjects according to sociodemographic profile

Variables		Number (n=350)	Percentage
Gender	Male	252	72
	Female	98	28
Age group	15-19	28	8.00
	20-24	130	37.14
	25-44	163	46.57

	45-64	29	8.29
Religion	Hindus	257	73.42
	Buddhists	71	20.29
	Muslims	22	6.29
Education	Illiterate	99	28.29
	Primary	64	18.29
	Upper primary	51	14.57
	Secondary	90	25.71
	Senior Secondary	40	11.43
	Graduate	6	1.71
Marital status	Married	219	62.57
	Never married	121	34.57
	Widowed	6	1.72
	Separated	4	1.14
Socioeconomic status	Class I	7	2.00
	Class II	78	22.29
	Class III	168	48.00
	Class IV	89	25.42
	Class V	8	2.29
Category of workers	Skilled	88	25.14
	Semiskilled	85	24.29
	Unskilled	177	50.57

In the study 252 (72%) were male and 98 (28%) were female construction workers. Mean age of the study subjects was 28.40 ± 9.25 years, the range being 17-59 years. Overall 163 (46.57%) of study subjects belonged to the age group of 25-44years. Majority 257 (73.42%) were Hindu by religion. In these study i.e. 99(28.29%) were illiterate and majority 219 (62.57%) of the total study subjects were married. 168 (48%) of the study subjects belongs to socioeconomic class III, and only 7 (2%) of study subjects belongs to socioeconomic class I. 177 (50.57%) were unskilled workers, 88 (25.14%) were skilled and 85 (24.29) were semiskilled workers.

In the present study significantly more number of males were literate than females (X^2 = 14.25, df=1, p value = 0.0001). Also significant difference was seen between category of workers and gender (X^2 = 62.15, df =2, p value = < 0.0001). No significant difference was found between mean age of males and females.(Z= 0.46, P value= 0.64)

Table 2: Distribution of study subjects according to system wise morbidities present

System	Morbidities / Complaints	ICD Code	No. (N=350)	%	
Respiratory	Common cold and sinusitis	J00-J01	33	9.43	18
	Pharyngitis	J02	9	2.57	
	Acute Rhinitis	J00	7	2.00	
	Acute Bronchitis	J20	6	1.71	
	Chronic Rhinitis	J31	4	1.14	
	Chronic bronchitis	J41	4	1.14	
Circulatory	Hypertension	I10	26	7.43	9.14
	Varicose veins	I83	6	1.71	
Digestive	Constipation	K59	12	3.43	10
	Gastritis	K29	4	1.14	
	Hernia	K40	4	1.14	
	Stomatitis	K12	3	0.86	
	Acute gastroenteritis	A09	5	1.43	
	Abdominal pain	R10	5	1.43	
	Flatulence	R23	2	0.57	
Skin	Contact Dermatitis	L23,L25	12	3.43	8.29
	Pruritus unspecified	L29	9	2.57	
	Fungal infection	L08	3	0.86	
	Cracked skin	R23	5	1.43	
Musculoskeletal and connective tissue	Joint Pain	M25	20	5.72	19.43
	Low backache	M54	16	4.57	
	Others(Generalized body ache, headache, myalgia and fatigue)	(R51, R52, R53)	32	9.14	
Eye and adnexa	Conjunctivitis	H10	5	1.43	1.43
Injuries	Injuries	S00-S99	18	5.14	6.28
	Insect bite	T14	4	1.14	

Table 2 shows distribution of study subjects according to the system wise presence of morbidities. Most prevalent morbidities found to be Musculoskeletal and connective tissue disorder 19.43%, among which joint pain, low backache was found in 20 (5.71%) and 16 (4.57%) respectively. Next common morbidity was respiratory 63 (18%). Digestive morbidities was seen in 35 (10%) of study subject. Circulatory morbidity found in 32 (9.14%) of study subjects. Skin morbidity was observed in 29 (8.29%) study subjects. Injuries were seen in 22 (6.28%)

of study subjects. Only 5 (1.43%) of study subjects were having ocular morbidity.

Table 3: Distribution of study subjects according to morbidity and category of workers

Morbidity	Category of worker							
	Skilled (n=88)		Semiskilled (n=85)		Unskilled (n=177)		χ^2 df =2	P value
	No.	%	No.	%	No.	%		
Respiratory	4	4.55	22	25.88	37	20.90	15.38	0.0004
Circulatory	26	29.55	3	3.53	3	1.69	59.14	<0.0001
Digestive	11	12.50	8	9.41	16	9.04	0.82	0.6619
Musculoskeletal	21	23.86	14	16.47	33	18.64	1.65	0.4381
Skin	16	18.18	3	3.53	10	5.65	15.49	0.0004
Eye and adnexa	3	3.41	2	2.35	0	0	2.966	0.22*
Injuries	1	1.14	9	10.59	12	6.78	6.706	0.03

* Yates corrected Chi square test

Table 3 shows distribution of study subjects according to morbidities and category of workers. Morbidities such as respiratory, circulatory, skin and injuries are found to be statistical significant with category of workers. While no significant difference was found for rest of the morbidities such as digestive, musculoskeletal and eye and adnexa with category of workers.

Discussion

In the present cross sectional study, there were more males 252 (72%) than females 98 (28%) in our study. Shah CK et al(2009)(15) also found that 67.91% were males and 32.08 % were females in a study conducted at Ahmedabad district. We found out that 91.71 % belonged to 15-45 years of age group and mean age of the study subjects was 28.40 ± 9.25 years, the range being 17-59 years. Findings were consistent with the study conducted by Gupta A et al (2016)(2) and Adsul BB et al (2011)(7). In these study, 28.29% of the study subjects were illiterate while the remaining 71.71% of them were literate. Similarly Adsul BB et al (2011)(7) found that 33.4% of the construction workers were illiterate while 66.4% were literate. In the present study, we found out that majority 48% of the study subjects belonged to Class III while 25.43% belonged to Class IV, 22.29% belonged to Class II, 2.29% belonged to Class V and 2% belonged to Class I

according to Modified B G Prasad socio-economic scale for the year 2015, December AICPI- 269. In contrast to our findings Gupta A et al (2016)(2) reported that majority of the workers, 96.33% belonged to class IV (Upper Lower Class) and remaining 3.67% belonged to class III (Lower Middle Class). In the present study, we found that 25.14% of the study subjects were skilled workers, 24.29% of them were semi-skilled workers and 50.57% of them were un-skilled workers. In a study conducted by Gupta A et al (2016)(2), skilled, semi skilled and unskilled workers were 21%, 10.67% and 68% respectively.

In the present study, we found out that the major morbidity at the construction site was musculoskeletal morbidity with a prevalence of 19.43%. Close findings that 20% and 21% of construction workers having musculoskeletal problems were reported by Valsangkar S (2012)(18) and Mohammad Akram (2014)(19). While Adsul BB et al (2011)(7), found less prevalence i.e. 5.4% than our study due to presence of mostly mechanized work and less manual activity. Also high prevalence of musculoskeletal morbidity 58.2% and 60.76% was seen in Shaheen A (2005)(20) and Gurav RB et al (2005)(17). In these study, system wise morbidities such as respiratory, circulatory, skin and injuries are found to be statistical significant with category of workers.

Conclusion

The present cross sectional study was carried out at construction sites in Central India where out of 350 construction workers, none was below 14 years of age. Majority 252 (72%) were males and overall mean age of the study subjects was 28.40 ± 9.25 years, the range being 17-59 years. 28.29% of construction workers were illiterate, significantly more number of males were literate than females. Majority 177 (50.57%) were unskilled category of workers while none of the female study subject was skilled. Significant difference was seen between category of workers and gender. Most prevalent morbidities among construction workers were musculoskeletal (19.43%), followed by respiratory (18%), digestive (10%), circulatory (9.43%), skin (8.29%), Injuries (6.28%) and eye and adnexa (1.43%). Also respiratory, circulatory, skin morbidities and injuries found to be statistical significant with category of workers.

Recommendations

Periodic health check-up camps to be organized and conducted at the construction site to identify and treat the morbidities. Owners/contractors at construction sites should ensure safety measures to reduce accidents and injuries. Availability and regular use of personal protective equipments and first aid box for all construction workers should be emphasized. Appropriate and adequate information, education and communication(IEC) materials should be displayed at the building construction site in order to create awareness regarding health improve the health profile

Limitations

Study has all the inherent limitations of a cross-sectional study, a possibility of recall biases cannot be ruled out.

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