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Research Article

Study the association of demographic factors and health status of construction workers

Anurag Gupta[1]*, Ramakanth M. Gokhale[2]

[1]Department of Community Medicine, RCSM GMC, Kolhapur, Maharashtra, India
[2]Department of Community Medicine, BJGMC, Pune, Maharashtra, India

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***Correspondence:**
Dr. Anurag Gupta,
E-mail: anuragporwal1@yahoo.co.in

ABSTRACT

Background: Objectives of the study was to study socio-demographic profile of construction workers and to study association of demographic factors to health status of construction workers.
Methods: A cross sectional study was conducted at various construction sites. The study included 300 construction workers, aged >14 years and who were willing to participate in the study. Worker's Medical and occupational history was taken. Data was analysed using software Open-Epi version 2.3.1 and Microsoft Excel 2010. Chi-square test and Fisher Exact test were performed to detect he statistical significance.
Results: The mean age of workers was 28.02±8.19 years. Majority (52.33%) of the workers belonged to the age group of 15-25 years. Majority (82.67%) workers were males. 198 (66.00%) of workers were married. 224 (74.67%) belonged to Hindu religion and 60 (20%) were Muslim. 224 (74.67%) of workers were literate. Laborers constituted 204 (68%) of work force. 183 (61.00%) had duration in this occupation, less than 5 years. Majority i.e. 289 (96.33%) of the workers belonged to class IV (Upper Lower Class). Age, marital status, type of occupation and duration in the occupation are found to be significantly associated with the health of the worker.
Conclusions: Age, marital status, type of occupation and duration in the occupation are found to be significantly associated with the health status of the workers. Behavioral Change Communication activities should be actively carried out site to impart education about occupational health hazards and means to prevent them. Periodic health check-up of construction workers should be carried out.

Keywords: Construction workers, Kuppuswami scale, Behavioral change communication

INTRODUCTION

Occupational hazards cause or 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. The two broad categories of construction projects are building and civil engineering. All these types of work make up one industry, but each of them involves different exposure and thus differing health hazards.[1] Construction workers are exposed to a wide variety of health hazards at work. The exposure differs from job to job. Due to increased urbanization, population of cities are increasing so cities need infrastructure up gradation to support the ever increasing population. The areas around the city which have been less developed are undergoing rapid infrastructure related development. The construction activities take place throughout the year. The labour workforce is more susceptible to occupational hazards. Hence this cross sectional study was carried out various construction sites in an urban area to study the association between socio-demographic factors and health problems of the

construction workers. The objectives of the study was to study socio-demographic profile of construction workers and to study association of demographic factors to health status of construction workers.

METHODS

It is a cross sectional type of observational descriptive study. Sample Size is 300.[2]

Selection of study sites and subjects

On the basis list of construction sites, collected from 'Department of Construction and Development' of Municipal-Corporation, sites were plotted on the city map. Based on accessibility of construction sites, sample collection was done until targeted sample size (300) was reached. 'History taking' includes medical history and occupational history. All construction workers aged >14years of both sexes and who were willing to participate were included in the study. Data was analyzed using software Open-Epi version 2.3.1 and Microsoft Excel 2010. Chi-square test and Fisher Exact test were performed to detect he statistical significance. Institutional Ethics Committee approval was taken prior to the study. Possibility of risk involved in this study is Nil.

RESULTS

Demographic factors

Out of total 300 workers, majority of the workers 157 (52.33%) belonged to age group of 15-25 years, followed by 90 (30%) belonged to 26-35 years followed by 42 (14%) were in 36-45 years age group and 11 (3.67%) were above 46 years. The mean age of workers was 28.02±8.19 years with the range of 17-63 years. Out of total workers, 248 (82.67) were males and 52 (17.33) were female. Among 198(66%) married workers, 146(48.67%) were males and 52(17.33%) workers were females (Table 1).

Table 1: Demographic factors of construction workers.

Variables		No. of workers		Total (%)
		Male (%)	Female (%)	
Age Group (Years)	15-25	132 (44.00)	25 (8.33)	157 (52.33)
	26-35	70 (23.33)	20 (6.67)	90 (30.00)
	36-45	35 (11.67)	7 (2.33)	42 (14.00)
	46-55	7 (2.33)	0 (0)	7 (2.33)
	>56	4 (1.33)	0 (0)	4 (1.33)
Marital Status	Married	146 (48.67)	52 (17.33)	198 (66.00)
	Unmarried	102 (34.00)	0 (0)	102 (34.00)
Religion	Hindu	189(63.00)	35(11.67)	224 (74.67)
	Muslim	53(17.67)	7(2.33)	60 (20)
	Banjara	2(0.67)	10(3.33)	12 (4.00)
	Buddhists	4(1.33)	0(0)	4 (1.33)
Literacy Status	Illiterate	52(17.33)	24(8.00)	76 (25.33)
	Primary	77(25.67)	15(5.00)	92 (30.67)
	Secondary	98(32.67)	12(4.00)	110 (36.67)
	Higher Secondary	21(7.00)	1(0.33)	22 (7.33)
Occupation Skills	Unskilled	147 (49.00)	52 (17.33)	204 (68.00)
	Semiskilled	32 (10.67)	0 (0.00)	32 (10.67)
		54 (18.00)	0 (0.00)	54 (18.00)
		8 (2.67)	0 (0.00)	8 (2.67)
	Skilled	2 (0.67)	0 (0.00)	2 (0.67)
SES	Lower Middle (III)	11 (3.67)	0 (0.00)	11 (3.67)
	Upper Lower (IV)	237 (79.00)	52 (17.33)	289 (96.33)
Place of Residence	Maharashtra	54 (18.00)	10 (3.33)	64 (21.33)
	Out of Maharashtra	194 (64.67)	42 (14.00)	236 (78.67)
Duration in Occupation (Years)	≤5	144 (48.00)	39 (13.00)	183 (61.00)
	6 to 10	78 (26.00)	10 (3.33)	88 (29.33)
	>10	26 (8.67)	3 (1.00)	29 (9.67)
Total		248 (82.67)	52 (17.67)	300 (100)

In the present study, 224 (74.67%) workers belonged to Hindu religion, 60 (20%) were Muslims, 12 (4%) were Banjara and 4 (1.33%) were Buddha. Literacy status of workers shows that 224 (74.67%) of workers were literate among which, 92 (30.67%) workers had completed primary education. All unskilled workers were labourers, constituted more than 2/3rd i.e. 204 (68%) of work force, semi-skilled workers constituted 32 (10.67%) of work force and remaining were skilled workers (Table 1).

Table 2: Association between socio-demographic variables and health status of the workers.

Variables		No. of Workers		Total (%) (n=300)	Chi Square (p value)
		Symptomatic (%) (n=269)	Asymptomatic (%) (n=31)		
Age (years)	15-25	133 (49.44)	24 (77.42)	157 (52.33)	10.21 (p<0.05)
	26-35	87 (32.34)	3 (9.68)	90 (30.00)	
	36-45	38 (14.13)	4 (12.90)	42 (14.00)	
	>46	11 (4.09)	0 (0.00)	11 (3.67)	
Sex	Male	219 (81.41)	29 (93.55)	248 (82.67)	2.86 (p=0.14)
	Female	50 (18.59)	2 (6.45)	52 (17.33)	
Marital Status	Married	185 (68.77)	13 (41.94)	198 (66.00)	8.92 (p<0.05)
	Unmarried	84 (31.23)	18 (58.06)	102 (34.00)	
Education	Illiterate	70 (26.02)	6 (19.35)	76 (25.33)	3.96 (p=0.26)
	Primary	81 (30.11)	11 (35.48)	92 (30.67)	
	Secondary	96 (35.69)	14 (45.16)	110 (36.67)	
	HSC	22 (8.18)	0 (0.00)	22 (7.33)	
SES	Lower Middle (III)	11 (4.09)	0 (0.00)	11 (3.67)	Fisher Exact (p=0.59)
	Upper Lower (IV)	258 (95.91)	31 (100.00)	289 (96.33)	
Occupation	Unskilled	178 (66.17)	26 (83.87)	204 (68.00)	6.75 (p<0.05)
	Semiskilled	28 (10.41)	4 (12.90)	32 (10.67)	
	Skilled	63 (23.42)	1 (3.23)	64 (21.33)	
Duration in Occupation	≤5years	155 (57.62)	28 (90.32)	183 (61.00)	12.50 (p<0.05)
	>5 years	114 (42.38)	3 (9.68)	117 (39.00)	

According to Kuppuswami Scale, majority of the workers, i.e.289 (96.33%) belonged to class IV (Upper Lower Class) and remaining 11 (3.67%) belonged to class III (Lower Middle Class). Out of total 300 workers, 64 (21.33%) workers were from Maharashtra and 236 (78.67%) workers from others states especially from Northern and Eastern States. The duration in the occupation of majority i.e.183(61.00%) workers was less than 5 years, of 88(29.33%) workers was 6-10 years and of 29(9.67%) was more than 10 years (Table 1).[3,4]

Association between socio-demographic variables and health status of the workers

Workers were having various complaints like blunt trauma, abrasions, pricking injuries, backache, pain in knees, cough, allergic rhinitis, itching and some less common complaints like weakness or foreign body entered in eye. Workers having any of such type of complaints or disease were said as 'symptomatic workers' and total symptomatic workers were 269.

Out of 269 symptomatic workers, 133 (49.44%) of workers were from the age group 15 to 25 years, followed by 87 (32.34%) from the age group 26-35 years, 38 (14.13%) workers from the age group 36-45 years and 11 (4.09%) workers in the age group more than 46 years age group. The difference was found to be significant. Among 269 symptomatic workers, 219 (81.41%) were males and 50 (18.59%) female. This difference was not significant. Out of 269 symptomatic workers, 185 (68.77%) married and 84 (31.23%) were unmarried. This difference was significant. Among 269 symptomatic workers, 199 (73.98%) were literate and 70 (26.02%)

were illiterate. However this difference was not significant. (Table 2)

Out of 269 symptomatic workers, majority i.e. 258 (95.91%) were from class-IV (Upper Lower) and rest of the workers were from class-III (lower middle) according to Kuppuswami Scale. The difference was not significant. Among 269 symptomatic workers, 178 (66.17%) were un-skilled workers, 63 (23.42%) skilled workers and 28 (10.41%) were semi-skilled. This difference was significant. Among 269 symptomatic workers, 155 (57.62%) were in occupation of construction since less than 5 years and 114 (42.38%) workers were in the occupation since more than 5 years. The difference was significant. It shows significant association between health status of the workers and age, marital status, type of occupation of workers and duration in occupation of the workers. (Table 2).

DISCUSSION

Socio demographic factors

157 (52.33%) workers belonged to age group of 15-25 years, followed by 90 (30.00%) belonged to 26-35 years. Trupti Bodhare et al in their study on construction workers showed 13.58% workers belonged to age group of 15-25 years, followed by 45.06% belonged to 26-35 years. The mean age of workers in the present study was 28.02±8.19 years. Similar results seen in the study conducted by Kartik K. Shah on construction workers showed over all mean age of the subjects was 25.83±9.89 years. Due to manual work, most of the workers were from younger age group (Table.1).[5,6]

Out of 300 workers, 248 (82.67%) were males and 52 (17.33%) were females. A study conducted by Trupti Bodhare et al on construction workers showed 85% male workers and 15% female workers.[5] Out of 300 workers, 102 (34.00%) of the subjects were unmarried and 198 (66.00%) were married. In a study conducted on male construction workers by Hiteshree C. Patel et al showed 35.5% subjects were unmarried and 64.50% were married.[7] Out of 300 workers, 224 (74.67%) were Hindus, 60 (20%) were Muslims, 12 (4.00%) were Banjara and 4(1.33%) were Buddhists. According to Indian census data, the proportion of Hindus in the Indian population is 80.50% and that of Muslims 13.43% and that of Buddhists is 0.8%.[8] Education profile of workers shows that 224 (74.67%) of workers were literate and 76 (25.33%) were illiterate. According to Indian census data, adult literacy rate in India is 74.04% which is similar to present study (Table 1).[9]

In the present study, unskilled workers were labourers, constituted 204(68.00%) of work force, semi-skilled workers constituted 32 (10.67%) and skilled workers constituted 64 (21.33%) of work force. All the female workers were unskilled worker. In a study conducted by Hiteshree C Patel et al, more than two third (72%) workers were unskilled.[7] In any construction site, the skilled workers need assistance of more number of labourers who assist them, and hence the proportion of labourers is higher than skilled or semi-skilled workers. Most of the workers 289 (96.33%) belonged to class IV (Upper Lower Class) and remaining 11 (3.67%) to class III (Lower Middle Class) by Kuppuswami's Scale.[3,4] In a study conducted by Kumar et al, construction workers were mainly from lower socio economic strata. (Table.1).[10]

In the present study, nearly 78.67% of the workers were migrated specially from North-eastern states. Payal S. Laad et al in their study, done in Mumbai, found out that 64.22% were migrant workers. Balkrishna B. Adsul in their study, done in Mumbai, found that 18.82% migrants were from Uttar Pradesh, 17.01% were from Bihar. (Table.1).[11,12]

The duration in the occupation of majority of i.e. 183 (61%) workers was less than 5 years. In a study by Trivedi Ashish et al, Majority of workers (52%) were involved in construction work for the last 5 years or less.[13] It was natural that they had construction work experience < 5years. With the advancing age, the proportion of the workers in construction site was found to be less due to limitation in laborious work associated with age.

Association between socio-demographic variables, work profile and health status of the workers

Out of 300 workers, 269 were symptomatic. Majority i.e. 133 (49.44%) of workers were in the age group of 15 to 25 years. Among 269 symptomatic workers, 219 (81.41%) were males and 50 (18.59%) female. Out of symptomatic workers, 185 (68.77%) were married and 84 (31.23%) were unmarried (Table.2). The age, sex and marital status were significantly associated with health status of the workers. Study by Balkrishna B. Adsul shows that maximum symptomatic workers were from the age group <45 years. Maximum symptomatic workers were unmarried (58.13%).[12]

Among 269 symptomatic workers, 178 (66.17%) un-skilled workers and 155 (57.62%) were having duration in occupation < 5 years. This association between type of work and duration in occupation and health problems was found statistically significant (Table.2). Study by Balkrishna B. Adsul shows that among symptomatic workers, majority were unskilled (78.28%) workers.[12] Hiteshree C Patel et al in their study found that among symptomatic workers, 82.22% workers were unskilled.[7]

CONCLUSION

Majority of the workers are in the age group 15-25 years, are males and are married. Most of the workers are belonging to Hindu religion. Labourers (Unskilled workers) constitute the majority of the work force. Most of the workers belong to class-IV socioeconomic stratum. Majority workers were migrants. Age, marital status, type

of occupation and duration in the occupation are found to be significantly associated with the health of the workers.

Recommendations of the study was listed here; 1) Behavioural Change Communication (BCC) activities should be actively carried out at construction site to impart education about occupational health hazards and means to prevent them, importance of personal hygiene, importance and use of personal protective devices. 2) The workers should be made aware about government welfare schemes like Building and Other Construction Welfare Schemes (BOCW) for medical benefits, for educational assistance for children and also for disability benefits. 3) Provision of personal protective devices by the contractors and its use by the workers should be ensured. 4) Provision of first-aid box at construction site. 5) Periodic health check-up of construction workers should be carried out. 6) Immunization with inj. TT should be carried out for workers since they are prone to injuries. 7) Health card record of workers should be maintained by the contractors or Construction Company. 8) There should be provision of separate toilet and adequate privacy for women worker. 9) Load limit should be set lower and correct working procedures explained to them to reduce musculoskeletal disorders.

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