Research Paper

Volume : 5 | Issue : 5 | May 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Assessment of Health Problems Among Construction Workers in An Urban Area

Medical Science

KEYWORDS : Construction workers, musculoskeletal disorders, behavioural problems, Kuppuswami scale

Dr. Anurag Gupta 506, Phase-1, Evergreen Homes, Naglapark, Kolhapur (MH) 416003

Dr. R.M. Gokhale 488, Sadashiv Peth, Tilak Road, Pune (MH) 411 030

ABSTRACT

Aims and objectives: 1) To study socio-demographic profile of construction workers. 2) To study health problems of construction workers.

Material & methods: A cross sectional study was conducted at construction sites, included 300 construction workers, aged >14years. The medical and occupational history was taken. Data was analysed using software Open-Epi.

Results: Majority (52.33%) of the workers belonged to the age group of 15-25 years. Majority (82.67%) workers were males. Labourers constituted 68% of work force. Most common physical problem among workers was work-place injuries seen in 126 (42.00%) workers. Musculoskeletal disorders were seen in 110 (36.67%) workers. 230 (76.67%) were found to be addicted to tobacco and/or alcohol.

Conclusions: Common physical problem among workers were work-place injuries, musculoskeletal disorders and respiratory diseases.

Introduction

Workers represent half the world's population and are the major contributors to economic and social development. The growing informal economy is often associated with hazardous working conditions and involves such vulnerable groups as children, pregnant women, older persons and migrant workers[1].

The two broad categories of construction projects are building and civil engineering. Building applies to projects involving houses, offices, shops, factories, schools, hospitals, power plants, railway stations and so on. Civil engineering applies to all the other built structures in our environments, including roads, tunnels, bridges, railways, dams, canals and docks[2].

Due to increased urbanization, population of cities are increasing so cities need infrastructure up gradation to support the ever increasing population. The construction activities take place throughout the year. Construction workers are exposed to a wide variety of health hazards at work. Hence this cross sectional study was carried out various construction sites in an urban area to study health problems of the construction workers.

Objectives

1. To study demographic profile of construction workers.
2. To assess various health problems among construction workers.

Material & Methods

It is a cross sectional type of observational descriptive study. Sample Size is 300[3].

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.

Ethics:

Institutional Ethics Committee approval was taken prior to the study.

Risk involved: 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.

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 2/3rdi.e. 204(68%) of work force, semi-skilled workers constituted 32(10.67%) of work force and remaining were skilled workers.

According to **Kuppuswami Scale**[4,5] ,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 6-10years and of 29(9.67%) was more than 10years. (Table.1)

Variables Male (%)		No. of Workers Female (%)		Total (%)
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)

Table.1 Demographic factors of Construction Workers

Table.2 Health Problems among Construction Workers

Morbidity	No. of Workers (N=300)		Total (%) (n=300)	Chi Square (p value)
	Male (%) (n=248)	Female (%) (n=52)		
Physical Problems				
Work-place Injuries	104 (41.94)	22 (42.31)	126 (42.00)	0.002 (0.96)
Musculoskeletal Disorders	92 (37.10)	18 (34.62)	110 (36.66)	0.11 (0.74)
Respiratory Problems	47 (18.95)	10 (19.23)	57 (19.00)	0.002 (0.96)
Skin Disease	36 (14.52)	8 (15.38)	44 (14.67)	0.26 (0.87)
Ophthalmic Disorders	25 (10.08)	10 (19.23)	35 (11.67)	3.49 (0.06)
Hypertension	9 (3.63)	0 (0.00)	9 (3.00)	Fisher Exact (0.16)
Diabetes Mellitus	7 (2.82)	0 (0.00)	7 (2.33)	Fisher Exact (0.52)
Deafness	7 (2.82)	0 (0.00)	7 (2.33)	Fisher Exact (0.52)
Urinary Problems	0 (0.00)	4 (7.69)	4 (1.33)	Fisher Exact (<0.05)
GI Problems	2 (0.81)	1 (1.92)	3 (1.00)	Fisher Exact (0.87)
Others*	27 (10.89)	14 (26.92)	41 (13.67)	---
Psychological / Behavioural Problems				
Addiction	207 (83.47)	23 (44.23)	230 (76.67)	36.99 (<0.001)
Work-related Stress	13 (5.24)	8 (15.38)	21 (7.00)	6.79 (<0.05)
No Problems	29 (11.69)	2 (3.85)	31 (10.33)	

Table.2 shows that out of 248 male workers, major physical problems were work-place injuries, seen in 104 (41.94%) followed by musculoskeletal disorders in 92 (37.10%), respiratory problems in 47 (18.95%) and skin diseases in 36 (14.52%) male workers. Among 52 female workers, major physical problems were musculoskeletal disorders seen in 18(34.62%), followed by work-place injuries in 22 (42.31%), respiratory problems in 10 (19.23%) and ophthalmic disorders in 10 (19.23%) female workers.

27(10.89%) male workers and 14(26.92%) female workers reported generalized and somewhat vague complaints like giddiness, generalized weakness, headache etc. Addiction was the most common behavioural problem in males as well as females. Out of 248 male workers, 207(83.47%) were addicted to tobacco and/or alcohol. Out of 52 females, 23(44.23%) females had addiction, most common being of tobacco.

The behavioural problems like addiction and work related stress were significantly more in males as compared to females. The urinary problems were significantly more in females as compared to males. The other morbidities were similar in males and females and did not show any significant difference.

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**[6] 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**[7] 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).

Out of 300 workers, 248 (82.67%) were males and 52 (17.33%) were females. A study conducted by **Trupti Bodhare et al**[6] on construction workers showed 85% male workers and 15% female workers. 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**[8] showed 35.5% subjects were unmarried and 64.50% were married. 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**[9], the proportion of Hindus in the Indian population is 80.50% and that of Muslims 13.43% and that of Buddhists is 0.8%. Education profile of workers shows that 224 (74.67%) of workers were literate and 76(25.33%) were illiterate. According to **Indian census data**[10], adult literacy rate in India is 74.04% which is similar to present study. (Table.1)

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**[8], more than two third (72%) workers were unskilled. 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**[4,5]. In a study conducted by **Kumar et al**[11], construction workers were mainly from lower socio economic strata. (Table.1)

In the present study, nearly 78.67% of the workers were migrated specially from North-eastern states. **Payal S. Laad et al**[12] in their study, done in Mumbai, found out that 64.22% were migrant workers. **Balkrishna B. Adsul**[13] in their study, done in Mumbai, found that 18.82% migrants were from Uttar Pradesh, 17.01% were from Bihar. (Table.1)

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**[14], Majority of workers (52%) were involved in construction work for the last 5 years or less. It was natural that they had construction work experience <5years. With the advancing age,

Volume : 5 | Issue : 5 | May 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

the proportion of the workers in construction site was found to be less due to limitation in laborious work associated with age. (Table.1)

Health problems

In the present study, out of 248 male workers, 104 (41.94%) sustained work-place injury and out of 52 female workers, 22 (42.31%) had work place injuries. In a study by **Shah C.K.et al**[15] the prevalence of injuries was 25.42% and prevalence rate was almost equal in male and female workers. Male and female workers were exposed to the same work responsibilities hence no difference was seen in male and females in relation to work place injuries. (Table.2)

Out of 248 male workers, 92 (37.10%) and out of 52 female workers, 18(34.62%) were having musculoskeletal disorder. In a study by **Gurav et al**[16], 60.76% workers had musculoskeletal problems affecting 59.30% male and 62.93% of female workers. Musculoskeletal disorders are common problem of construction site workers. In the present study, increased mechanization for carrying bricks, cement bags etc. might have shown less prevalence of musculoskeletal disorders as compared to other studies. (Table.2)

Among 248 males workers, respiratory problems were seen in 47 (18.95%) and among 52 females, these were in 10 (19.23%) workers. In a study by **Gurav et al**[16], 4.86% workers had suffered from respiratory problems, affecting 5.23% of male and 4.32% of female workers. Out of total 300 workers, 44 (14.67%) were suffering from skin problems. Out of 248 male workers, skin diseases were seen in 36 (14.52%) workers and out of 52 females, skin diseases were seen in 8 (15.38%) workers. The overall prevalence (14.67%) is comparable with the other studies like in a study by **Gurav et al**[16] found that 11.46% of workers were having skin diseases, affecting 6.98% male and 31.03% female workers. The workers were exposed to various types of agents like cement, stones, rubbish which can cause contact dermatitis and allergic dermatitis. Among 248 male workers ophthalmic disorders were seen in 25 (10.08%) and among 52 females it was seen in 10 (19.23%) workers. **Balkrishna B. Adsul**[13] in their study found that ophthalmic morbidity was present only in 0.5% workers. (Table.2)

2) Behavioural problems-

Addiction was the most common behavioural problem in males as well as in females. The tobacco consumption was more in males as compared to females. In the present study, 47.33% of workers were consuming only tobacco. In a study by **Guravet al**[16], tobacco in form of smoking was seen in 45.49% of the workers and alcohol consumption was seen in male workers only. In a study, **Payal S. Laad**[12] observed that 63.8% workers were addicted to tobacco only. (Table.2)

Conclusions:

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. Common physical problem among workers in the descending order are work-place injuries, musculoskeletal disorders, respiratory diseases, skin diseases and ophthalmic disorders. Addiction was the most common behavioural problem in males as well as in females.

Recommendations

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.
2. Provision of first-aid box at construction site.
3. Immunization with inj. TT should be carried out for workers since they are prone to injuries.
4. Load limit should be set lower and correct working procedures explained to them to reduce musculoskeletal disorders.

Bibliography

1. Workers Health: Global Plan of Action [Online]. [Cited on 2013 October 15]. Available from:
2. URL:http://www.who.int/occupational_health/WHO_health_assembly_en_web.pdf
3. Kulkarni GK. Construction Industry: More needs to be done. Indian J Occup Environ Med 2007;11:1-2.
4. Lwanga SK. Sample size determination in health studies: a manual. Geneva: World Health Organization 1991;5-26.
5. Government of India. Ministry of Labour. Index no. page. Available from: URL http://www.labourbureau.nic.in
6. Park K. Socioeconomic status scale. Textbook of Preventive and Social Medicine. 22nd Ed. Jabalpur: BanarsidasBhanot; 2013. p.640, 641.
7. Bodhare T, Valsangkar S, Bele S. An epidemiological study of work related musculoskeletal disorders among construction workers in Karimnagar, Andhra Pradesh. Indian J Comm Med. 2011 October;36(4):304-7
8. Shah KR, Tiwari RR. Occupational skin problems in construction workers. Indian J Dermatol 2010:55(4):348-51.
9. Patel HC, Moitra M, Momin MH, Kantharia SL. Working Conditions of Male Construction Worker and Its Impact on Their Life: A Cross Sectional. Study in Surat City. National J Comm Med. Oct-Dec 2012;3(4):652-56.
10. Indian Census [Online]. [Cited on 2012 December 14]. Available from:
11. URL:http://censusindia.gov.in/Census_And_You/religion.aspx.
12. State of Literacy, Provisional Population Totals-India. [Online]. [Cited on 2013 September 21]. Available from URL:
13. http://censusindia.gov.in/2011-prov-results/data_files/india/Final_PPT_2011_chapter6.pdf
14. Kumar B, Singh BP, and Singh R. Rural outmigration from Bihar: A case study. Indian Journal of Labour Economics. 1998;41(4):729-36
15. Laad PS, Adsul BB, Chaturvedi RM, Shaikh M. Prevalence of substance abuse among construction workers. Indian journal of research. 2013 March;2(3):280-83.
16. Adsul BB, Laad PS, Howal PV, Chaturvedi RM. Health problems among migrant construction workers: A unique public–private partnership project Indian J Occup Environ Med. 2011 Jan-Apr;15(1): 29–32.
17. Trivedi A, Patel Y, Pandit N, Bhavsar B. Prevalence of Skin morbidity among construction site workers working at Vadodara. Healthline,J IAPSM, Gujarat Chapter. 2011 January-June;2(1):31-34.
18. Shah CK, Mehta H. Study of Injuries among Construction Workers in Ahmedabad City, Gujarat. Indian Journal for the Practising Doctor. 2009 Jan-Feb;5(6):(2009-01 - 2009-02)
19. Gurav RB, Kartikeyan S, Wayal R, Joshi SD. Assessment of health profile of daily wage labourers. Indian J Occup Environ Med 2005;9(3):115-7