



A STUDY OF MORBIDITY PATTERN AMONG CONSTRUCTION WORKERS IN KALABURAGI, NORTH KARNATAKA, INDIA

Sunil A Deshmukh¹, Shreeshail Ghooli²

Financial Support: None declared
Conflict of interest: None declared
Copy right: The Journal retains the copyrights of this article. However, reproduction of this article in the part or total in any form is permissible with due acknowledgement of the source.

How to cite this article:

Deshmukh SA, Ghooli S. A Study of Morbidity Pattern among Construction Workers in Kalaburagi, North Karnataka, India.. Ntl J of Community Med 2015; 6(3):411-414.

Author's Affiliation:

¹Assitant Professor; ²Assistant Professor (Bio-Stat), Dept. of Community Medicine, M. R. Medical College, Kalaburagi, Karnataka, India

Correspondence:

Dr. Sunil A. Deshmukh
drsunil.deshmukh@gmail.com

Date of Submission: 18-07-15

Date of Acceptance: 26-09-15

Date of Publication: 30-09-15

ABSTRACT

Background: Construction sector is a booming industry in India and the labours are susceptible to various health and occupational hazards as these workers work in dusty environment and it is an unorganized sector scattered all over India.

Method: A cross sectional study was carried out at various construction sites in Kalaburagi, Karnataka. Study included 150 male workers. Detailed socio-demographic information was collected on a pre-designed and pre-tested questionnaire.

Results: Of the 150 workers (all males) examined, (80%) belonged to 15-45 years age group. Highest morbidity was seen in the form of cough 72.55%, musculoskeletal complaints 60.78%, followed by breathlessness 47.05%, skin problems 39.22% and chest pain complaints 39.22%.

Conclusion: The present study concluded that the workers in this industry are exposed to stone dust which leads to various morbidities especially respiratory and skin problems and heavy work leading to musculoskeletal problems. These problems are significantly associated with duration of exposure.

Key Words: Peak expiratory rate, morbidity, construction sites

INTRODUCTION

Construction provides much needed work opportunities for some of the poorest and most marginalized sections of society in developing countries. In India the total work force comprises around 240 lakhs, out of which 92.5% is in un-organized sectors, though a small segment is well organized and this group is harvesting the rich benefits due to them either lawfully or unlawfully¹.

The construction workers were subjected to illness suffered not only of those of fellow citizens

but also subjected to certain illness due to mainly their work environment which is peculiar to each work place or industry. As the construction activities go on throughout the country, work related musculoskeletal disorders are important cause of functional impairments and disability among workers but also emits substantial quantity of stone dust which creates health hazards to the workers as well as surrounding population by way of causing respiratory, skin and eye infections. Exposure to cement dust for longer duration of period could lead to different respiratory

ailments including silicosis, lung cancer, chronic obstructive lung disease, bronchitis and emphysema^{2,3,4}

The objectives of the study were to study the morbidity pattern, factors influencing the respiratory, musculoskeletal and other problems among the workers and to suggest the various measures for the improvement in the health status of the workers.

METHODS

The present study was carried out for a period of 1 year from November 2013 in Kalaburagi city, which is in the northern part of Karnataka, India. All the male workers who were working for more than one year at construction sites were included except female workers, their young children, owner of the site and engineers.

The present study was conducted at various construction sites in Kalaburagi city, Karnataka, India. And comprising 150 male workers aged between 15-55 years working at these sites. All the subjects were personally contacted examined and interviewed using pre-designed and pre-tested proforma. This was followed by a detailed clinical examination. Investigations like Hb%, and pulmonary function test were also carried out using Peak expiratory flow meter (Wright's peak flow meter).

Statistical data was analyzed by using SPSS Windows 16.0 version, large sample test (Z-test) is applied for significance. Informed written consent was taken from participants.

RESULTS

In the present study 80 % of workers were between 15-45 years, 62.7 % were illiterate, as a

whole literacy is low in Kalaburagi district (This is one of the most backward district of North Karnataka) with a total literacy percentage of only (54.34 in 2001) 64.85% in 2011 and in the present study 80.67% workers had one or other habits of either smoking, gutka chewing or alcohol consumption. The construction work is a monotonous job and requiring higher muscular activities these workers tend to have one or other habit.

It was observed from above table that there is no association between education and morbidity.

It is observed from the above table that, out of 25 smokers 23 had PEFR 400L/min and among 125 nonsmokers 28 had PEFR less than 400L/min. The association between smoking & lung parameters (PEFR) was highly significant (P<0.001).

Table 4 shows that PEFR was less than 400L/min in 58.82% workers with less than 13gm%, however 70.67% workers with PEFR more than 400L/min having normal Hb% there was highly significant association between haemoglobin % with lung function parameter (PEFR).

Table 1: Distribution of workers according to demographic profiles (n=150)

Age group (in years)	No. of workers (%)
15-25	21 (14.0)
25-35	45 (30.0)
35-45	54 (36.0)
45-55	30 (20.0)
Education status	
Illiterates	94 (62.7)
Primary school	44 (29.3)
High school	12 (8.0)
Habit	
Smoking	25 (16.7)
Alcohol	39 (26.0)
Gutka	57 (38.0)
No Habit	29 (19.3)

Table 2. Association between education status and morbidity

Morbidity	Illiterates (%)	Primary School (%)	High school (%)	Total (%)	χ ² -Value	P-value
Eyes	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-	
Deafness	5 (5.3)	2 (4.5)	0 (0.0)	7 (4.7)	0.0036	0.9522
Skin disorders	21 (22.3)	6 (13.6)	1 (8.3)	28 (18.7)	2.25	0.1336
Hypertension	8 (8.5)	2 (4.5)	2 (16.7)	12 (8.0)	0.44	0.5071
Cough	40 (42.5)	18 (40.9)	10 (83.3)	68 (45.3)	0.55	0.4583
Breathlessness	26 (27.6)	8 (18.2)	5 (41.6)	39 (26.0)	2.41	0.1206
Chest pain	13 (13.8)	9 (20.5)	5 (41.6)	27 (18.0)	0.44	0.5071
Musculoskeletal disorders	31 (32.9)	17 (38.6)	9 (75.0)	57 (38.0)	0.02	0.8875

Table 3: Association between Lung function parameter (PEFR) with Smoking

Habits	PEFR (<400) n=51 (%)	PEFR (400-600) n=101 (%)	Total (%)
Smokers(25)	23 (45.1)	2 (2.02)	25 (16.67)
Non-Smokers(125)	28 (54.9)	97 (97.98)	125 (83.33)

$\chi^2= 44.56$ df= 1 P< 0.001

Z=5.84, P<0.01

Table 5: Distribution of workers based on duration of exposure

Duration of Exposure (in months)	No= 150 (%)
≤20	32 (21.3)
20-40	71 (47.3)
40-60	25 (16.7)
60-80	16 (10.7)
80-100	4 (2.7)
≥100	2 (1.3)
Mean±SD	36.5±12.3

Table 4: Distribution of workers based on haemoglobin percentage

Hb%	PEFR (<400) n=51 (%)	PEFR (400-600) n=101 (%)	Total (%)
<13	30 (58.82)	14 (14.14)	44 (29.33)
13-14	13 (25.49)	41 (41.42)	54 (36.00)
≥14	8 (15.69)	44 (44.44)	52 (34.67)
Mean±SD	12.19±1.79	13.75±0.92	

It is observed that maximum duration of exposure was 20-40 months 47.33% (71), 21.33% (32) had exposure for <20 months, 16.67% (25) had exposure for 40-60 months, 10.67% (16) had exposure for 60-80 months, 2.67% (4) had exposure for 80-100 months and 1.33% (2) had exposure for ≥100 months.

Table 6: Morbidities amongst the workers

Morbidities	PEFR (<400) (n=51) (%)	PEFR (400-600) (n=99) (%)	Total	χ^2 -Value	P-value
Eyes	0 (0.00)	0 (0.00)	0	0	--
Deafness	6 (11.76)	1 (1.01)	7	6.50	0.0105
Skin Disorders	20 (39.22)	8 (8.08)	28	21.49	0.0001
HTN	10 (19.61)	2 (2.02)	12	11.86	0.0006
Cough	37 (72.55)	31 (31.31)	68	23.10	0.0001
Breathlessness	24 (47.05)	15 (15.15)	39	17.81	0.0001
Chest pain	20 (39.22)	7 (7.07)	27	23.56	0.0001
Musculoskeletal	31 (60.78)	26 (26.26)	57	17.03	0.0001

The above table shows that higher morbidities were seen in workers with PEFR <400 L/min as compared to lower morbidities in workers with PEFR (400-600 L/min).

DISCUSSION

The present cross sectional study was carried out among 150 workers at various construction sites in Kalaburagi city with the objective of studying the health status and various factors influencing the health. In the present study 80% workers were between 15-45 years. None of the workers were below 15 years or above 55 years as construction work is a heavy manual work. It was observed that by Rajnarayan .T et al in his study among quartz stone grinders of Chotedepur 48.6% workers were between 30-45 years age group⁵, similar study by Narkhede Vinod et al, among stone crusher workers that in study population 73.86% subjects were in the age group of 15-45 years⁶.

In the present study 62.7% were illiterate, as a whole literacy is low in Kalaburagi district with a total literacy percentage of only 50.65%⁷. However R.D Tribuwan et al found out similar findings among stone quarry workers of 68% illiterates in his study⁸. It was observed from table 2 that there is no association between educational status and morbidity.

In the present study 80.67% workers had one or other habits of either smoking, gutka chewing or alcohol consumption to overcome heavy muscular work. Similarly Rajnarayan.R.Tiwari et al⁵ found that 39% and A.N.Nwibo et al found 17% of workers were having smoking habit⁹. It was observed from table no.3 that there is highly significant association between smoking and lung parameters. Similar observation was made by V.B Ghotkar et al¹⁰ and Arcangeli G et al¹¹ in their respective studies.

In the present study 29.33% workers were found to be anaemic (Hb < 13gms %). This is low as compared to national figure as the cut-off point for the diagnosis of anemia in adult male is Hb is 13g/dl. In a study by R.R.Tiwari et al found out Hb% less than 11gms%.¹² and the higher morbidity were seen in workers with less than 400L/min as compared to workers with PEFr more than 400L/m.

The highest morbidity was cough (72.5%) followed by musculoskeletal complaints (60.78%), chest complaints (39.22%) and skin disorders (39.22%). Similar finding was found in WHO report that low back pain 37%, hearing 16%, COPD 13%, asthma 11%, lung cancer 9% and leukemia 2%¹³ and Julitta S Boschman et al in their study observed Work-related musculoskeletal disorders are an important cause of functional impairments and disability among construction workers¹⁴. Another study done by Kartik R Shah and Rajnarayan R Tiwari among 92 study subjects 47.8% workers had morbid skin conditions, frictional callosities in palm were observed in 18 (19.6%) subjects while 4 (4.3%) subjects had contact dermatitis¹⁵, similar observation related to musculoskeletal disorders were reported according to research conducted by The center for construction workers Research and Training¹⁶.

CONCLUSION

The study reveals that mean duration of exposure and the association between smoking, Hb% & lung parameters (PEFR) was highly significant. Higher morbidities were seen in workers with PEFr < 400L/min as compared to lower morbidities in workers with PEFr (400-600L/min). Workers at construction sites had complains mainly related to respiratory and musculoskeletal systems. These workers should use protective gears in order to prevent inhalation and contact of silica dust. The construction companies should make use of modern techniques for lifting materials to reduce burden on workers thus reducing musculoskeletal morbidity.

Acknowledgement

We acknowledge and thank all the staff members of our department, urban and rural health training centre for their support.

REFERENCES

1. Report of the Committee on Unorganized Sector Statistics, National Statistical Commission Government of India, Share of labour input in unorganized sector construction, February 2012, and Table 4.2.
2. American Lung Association, State of Lung Disease in Diverse Communities, 2010, page 63.
3. V.Karkhanis and J.M.Joshi. Cement dust exposure-related emphysema in a construction worker "Lung India" 2011 (Official Publication of Indian Chest Society) Oct-Dec; 28(4): 294-296.
4. Occupational disease among construction workers. The center for construction workers Research and Training, April 2013. The construction chart book 5th Edition. page, no. 35.
5. Rajnarayan R.Tiwari, Yashwanth, K.Sharma, Habibullah N. Saiyed. Peak Expiratory Flow: A Study among silica-exposed Workers. Indian journal of occupational and environmental medicine 2004. Vol 8, issue 1, page no.7-10.
6. Narkhede Vinod, Likhhar Swarna, Mishra K. Morbidity profile of stone crusher workers with special reference to respiratory morbidity A cross sectional study. National Journal of Community Medicine, July - Sept 2012, Volume 3, Issue 3, page.no.368-371.
7. Gulbarga (Kalaburagi) District: Census 2011. Available at <http://www.census2011.co.in/census/district/256-gulbarga.html>
8. R.D Tribuwan, Jayshree Patil, Stone quarry workers, Social security and development issues. Discovery Publishing House PVT.LTD. New Delhi, 01-Jan-2009, p 218.
9. A.N.Nwibo, Emmanuel Ugwuja. Pulmonary problems among quarry workers of stone crushing industrial site at Umuoghara, Ebonyi State, Nigeria. International Journal of Occupational and Environmental Medicine, Vol 3 Number 4; October, 2012, Page.no.183
10. V.B.Ghotkar, B.R.Maldhure, S.P.Zodpey, Involvement of lung and lung function tests in stone quarry workers' Indian journal tuberculosis, vol 42 no.3 july, 1995. page.no.155
11. Arcangeli G, Cupelli V, Montalti M, Pristera M, Baldaseroni A, Giuliano G. Respiratory risks in tunnel construction workers, International Journal of Immunopathology and Pharmacology. 2004 May-Aug; 17(2 Suppl):91-6
12. R.R.Tiwari, Y.K Sharma, A.B. Karnik, N.G.Sathwara, H.N.Saiyed, Serum angiotensin converting enzyme activity and serum calcium levels in covert silicosis, (Indian journal of occupational and environmental medicine, dec 2005, vol 9, issue 3, page.no.125
13. W.H.O world report 2002, Selected occupational risks, Chapter-4, No-9.
14. Julitta S Boschman, Henk F van der Molen, Judith K Sluiter and Monique H.W Frings-Dresen, Musculoskeletal disorders among construction workers, a one-year follow-up study in Netherland in December 2009, BMC Musculoskeletal Disorders 2012, 13:196
15. Kartik R Shah and Rajnarayan R Tiwari, Occupational skin problems in construction workers, Indian Journal of Dermatology. 2010 Oct-Dec; 55(4): 348-351.
16. Occupational disease among construction workers. The Center for Construction Workers Research and Training, April 2013. The construction chart book 5th Edition page no.47,48.