

Research Article

ASSESSMENT OF HEALTH STATUS OF THE STONE QUARRY WORKERS IN YELAKELI, WARDHA DISTRICT IN CENTRAL INDIA.

Dr. Manish A Prasad¹, Dr. Vijay Bhagat², Dr. Vasant Wagh³, Dr. Abhay Mudey⁴,
Dr. Smrutiranjana Nayak⁵, Dr. Varun Gaiki⁶



¹ Post Graduate Student, ² Associate Professor, ³ Professor, ⁴ Professor and Head, ^{5,6} Assistant Professor
Department of Community Medicine, Jawaharlal Nehru Medical College, Sawangi, Wardha, Maharashtra

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Corresponding Author:

Dr. Manish A Prasad,
Post Graduate Student,
Department of Community Medicine,
Jawaharlal Nehru Medical College,
Sawangi, Wardha, Maharashtra

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ABSTRACT

Background: Stone Quarry workers in India work in dusty environment and it is an unorganized sector scattered all over India. Various procedure and methods are involved in this work. Respiratory morbidity is commonly associated with this industry.

Objective: 1) To Study the socio-demographic profile of stone quarry workers in Wardha district. 2) To assess the health status of stone quarry workers with special reference to respiratory morbidities.

Method: A cross sectional study was carried out at a stone quarry in Yelakeli, in Wardha district. It included total 150 workers of which Male: 138, Female: 12. Pulmonary function test was also carried out.

Result: Most of the workers 63% of them were between 21 to 40 years of age. 89% of the workers were staying near the stone crushing industry. 68% of the workers were working since less than 5 years. 81% of the workers were not using any protective equipment. Smokers had decreased PEFR than the non-smokers, more than 30 years old had decreased PEFR.

Conclusion: Many of workers had some or the other health related problems. The significant problems were musculoskeletal problems, eye problems and respiratory problems.

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INTRODUCTION

Stone Crushing Industry is an important industrial sector in the country engaged in producing crushed stone of various sizes depending upon the requirement which acts as raw material for various construction activities such as construction of Roads, Highways, Bridges, Buildings and Canals etc. **Aliyu AA et al**, in year 2006 a studied in Nigeria in the quarry in Zaria City in order to obtain data on socio-demographic characteristics, occupational profile, hazards, safety measures and PEAK flow measurement. PEF values of most (55.4%) of the workers were abnormal. ^[1] The consequence of an inhaled particle depends on its inherent toxicity, its ability to penetrate the site at which it can exert its effects and the amount retained in the lung. ^[2] Therefore considerable lung function impairment in this group of workers is reported in the literature. ^[3]

MATERIAL & METHOD:

The study area is in Yelakeli at a distance of 9 km away from Wardha city. The study area included 10 stone crushers. The extent of the area is 3 km. It included total 150 workers of which Male: 138, Female: 12. Using interview technique as a tool for data collection demographic and occupational details of the subjects were recorded on the predesigned proforma which included

questions regarding age, sex, educational status, socioeconomic status, duration of employment and symptoms. RMS HELIOS 401 spirometry was used for studying the pulmonary function test in all the workers in the stone crushing industry.

STATISTICAL ANALYSIS

Data was analyzed using SPSS and Microsoft Excel. Appropriate Statistical test were applied to test the significance of the findings.

OBSERVATIONS & RESULT

Most of the workers 63% of them were between 21 to 40 years of age. 89% of the workers were staying near the stone crushing industry. 68% of the workers were working between 5 to 10 years. 81% of the workers were not using any protective equipment. About 94 % of the workers were not aware of the effects of working in the stone quarry industry. About 62% of the workers were addicted to either tobacco or alcohol. About 57% of the workers had some or the other health related problems. 35% of the workers had abnormal (PFT).

The table shows the age, gender, addiction, duration of work and respiratory morbidity with the Peak expiratory flow rate (PEFR). Smokers had decreased PEFR

than the non-smokers, more than 30 years old had decreased PEFR. Those having respiratory morbidities had decreased PEFR. On applying t test it was found to be non-significant.

Table I: Distribution according to Socio-economic conditions, protective measures, symptoms and addictions.

Variables	Subgroup	Male	Female	Total (n=150)
Age	<21	15(10.00%)	1(0.66%)	16(10.66%)
	21 - 30	35(23.33%)	3(2.00%)	38(25.33%)
	31 - 40	51(34.00%)	5(3.33%)	56(37.33%)
	41 - 50	24(16.00%)	2(1.33%)	26(17.33%)
	>51	12(8.00%)	2(1.33%)	14(9.33%)
Residence	Near Stone crushers	121 (80.66%)	12 (80.00%)	133 (88.66%)
	Away from stone crushers	16(10.66%)	1(0.66%)	17(11.33%)
Protective measures	Used	27(18.00%)	1(0.66%)	28(18.66%)
	Not used	111 (74.00%)	11 (7.33%)	122 (81.33%)
Presenting Complaints (Multiple Response)	Respiratory problem	38(25.33%)	2(1.33%)	40(26.66%)
	Musculoskeletal problem	44(29.33%)	4(2.66%)	48(32.00%)
	Eye Problems	27(18.00%)	1(0.66%)	28(18.66%)
	Other(eg: Abdominal)	4(2.66%)	1(0.66%)	5(3.33%)
	None	58(38.66%)	6(4.00%)	64(42.66%)
Addiction	Tobacco Chewing	29(19.33%)	5(3.33%)	34(22.66%)
	Gutkha / Pan-Masala	40(26.66%)	4(2.66%)	44(29.33%)
	Smoking	10(6.66%)	1(0.66%)	11(7.33%)
	Alcohol	3(2.00%)	1(0.66%)	4(2.66%)
	None	54(36.00%)	3(2.00%)	57(38.00%)

Table II: Pulmonary Function Test

Pulmonary Function Test(PFT)	Stone quarry workers		Total (n=150)
	Male	Female	
Normal	100(66.66%)	9(6.00%)	97(64.66%)
Obstructive lung disease	26(17.33%)	1(0.66%)	27(18.00%)
Restrictive lung disease	19(12.66%)	1(0.66%)	20(13.33%)
Mixed lung disease	5(3.33%)	1(0.66%)	6(4.00%)

Table III: Association of various risk factors with mean PEFR

Type of Risk Factors	Subtype (n=150)	Mean Observed PEFR(L/s)	SD	t-Test
Age	<30 years (n=95)	5.81	±1.48	t = 0.787 P = 0.433 NS*
	≥ 30 years (n=55)	5.60	±1.73	
Gender	Males (n=138)	5.75	±1.63	t = 1.279 p = 0.203 NS*
	Females (n=12)	5.12	±1.71	
Addiction	Smokers (n=18)	5.20	±1.77	t = -1.385 p = 0.168 NS*
	Non Smokers (n=132)	5.77	±1.62	
Duration of work	≤ 5 years (n=53)	5.83	±1.47	t = 0.172 p = 0.477 NS*
	> 5 years (n=97)	5.63	±1.73	
Respiratory Morbidity	Present (n=44)	5.62	±1.69	t = -0.406 p = 0.685 NS*
	Absent (n=106)	5.74	±1.63	

NS*=Non-significant

DISCUSSION

In the present study it has been noted that most of the workers had health related problems like the respiratory problems, musculoskeletal problems eye problems which was similar to the results shown in the study done by Narkhede V et.al. [4]. 68% of the workers were working between 5 to 10 years. And large numbers of them were suffering from breathing problems. Ghotkar VB et al, study has shown that the presence of underlying respiratory diseases unrelated to occupational exposures cannot be excluded but the results of the respirable dust measurements and the long history of high level exposures (5-15 years) indicate that observed lung function impairments are most likely directly related to occupational exposures. [5]

The complaints related to musculo-skeletal system i.e. headache, backache, weakness, joint pain and muscular pain can be attributed to the repeated movements, stress and strain and carrying heavy loads might lead to osteoarthritis of the joints which is similar to the study done by Tiwari RR et al. [6] Smokers had decreased PEFR than the non-smokers, more than 30 years old had decreased PEFR. Those having respiratory morbidities had decreased PEFR. Tiwari RR et al also observed that the decline in PEFR was significantly associated with advancing age, longer duration of exposure to cotton dust, tobacco smoking and presence of respiratory morbidity. [6]

CONCLUSION

Many of workers had some or the other health related problems. Most of the illnesses were related to musculoskeletal, ophthalmic and respiratory problems. Protective measures were not used. Most of the people used to live near the stone quarries. PEFR was found to be decreased in the smoker's. Similarly decreased PEFR was observed as the age and duration of work increases.

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