



Comparative Study Of Health Of Marble Rock Workers & Cement Workers In Jabalpur

Dr. Manju Dixit¹ & Shephali saxena²

Assistant Professor

St. Aloysius college (Autonomous) Jabalpur

Abstract – Exposure of marble dust and cement dust is great risk and cause many pulmonary diseases in marble stone and cement workers. The aim to the study was to find out the occupational health risks posed by the dust to the workers in Jabalpur City. The cement and marble dust consist the concentration of silica and the heavy metals and long exposure to silica causes Silicosis, Emphysema which is a type of chronic obstructive pulmonary disease. Deposition of dust on the skin and eyes causes irritation to the eyes and may develop conjunctivitis. Deposition of the heavy metals may cause kidney and brain damage and lung cancer. The study was designed to investigate the effects of airborne dusts on the lung function of construction workers and also focused on investigating the knowledge, practice and perception of the sand stone quarry workers.

Key Words-Marble dust, Cement dust, Silicosis, Emphysema

1. Introduction-- Industrialization and urbanization, occupation morbidities are on high risk in India. Marble has been commonly used in the sculpturing of statues, the construction of building and monument since the ancient times. It is a material used in tiles, counter tops and indoor flooring.

Cement is another material which is used for construction of building. Cement Particles which are inhaled are lodged in lungs and causes lung irritation, mucus hyper secretion initially followed by lung function impairment, lung inflammation, chronic obstructive lung disease, restrictive lung disease and pneumoconiosis. Occupational exposure includes Portland cement whose constituents are calcium oxide, silicon oxide, aluminium oxide, ferric oxide, magnesium oxide and other impurities.

Dust pollution in marble and cement pose various health risks to the workers including respiratory ailments, skin and eye problems. Depending on the chemical compositions and the concentration of the dust, the workers are exposed to inhalation of silica bearing dust thus being at risk of developing silicosis, a fatal lung disease. Exposure to substance like flock and silica can cause fibrosing lung disease, whereas expose to carcinogens like asbestos and beryllium can cause cancer.

There have been several studies on work related respiratory symptoms and ventilatory disorders among employees of cutting and cement workers. Silicosis is a type of pneumoconiosis and it is form of occupational lung disease caused by inhalation of crystalline silica dust, and is marked by inflammation and scarring in the form of nodular lesions in upper lobes of the lungs. Emphysema is another type of chronic obstructive pulmonary disease (COPD). In Emphysema air sac destroy and wall of lungs thick and enlarged. The air sacs in the lungs become damaged and stretched. Other studies had shown that cement dust may enter into systemic circulation and thereby reaching all the organs of the body and different tissues including heart, liver, spleen,

bone, hair, skin and ultimately affecting their microstructures and physiological performance as it creates the breeding ground for vector. The study designed to investigate the effects of airborne dusts on the lung function of construction workers matched for age, height and weight.

The study aimed to determine the effect of long term exposure to cement dust and marble dust on lung function in non-smoking cement mill workers as well as marble cutter workers. The specific objectives of the study to assess the marble and cement workers awareness of the safety and the health risks in the workers.



2. Material and Methods—

2.1 Study Area- Bhedaghat is famous for its beauty and marble stone rocks. It is situated near Jabalpur Madhya Pradesh and surrounded by small shops of Marble cutting workers those are exposed to marble dust for long duration. Through mechanical operation and cutting of marbles produce large quantity of noise pollution and generate dust. During survey follow up visits and repeat assessment was done. Hundred workers were selected in different shop of Bhedaghat by simple random sampling method. Workers enquired about environmental conditions and use of preventive measures through a list of questionnaires by a group of volunteers.

2.2 Inclusion Criteria-- Both men and women who were residents of Jabalpur City for more than 10 to 25 years duration and employed in various cement shops and in stone cutting workers were included in our study.



2.3. Sampling procedure & Sample Size-- There were different 20 sites for marble and cement workers in Jabalpur city. The workers were then stratified into three in order to capture the different dust exposure levels, the quarry pit workers forming one stratum, those working at the crushing plant, forming the second and the mechanics and the office workers forming the third stratum. The total number of workers of cement is 288 shown in table 1 similarly number of workers of cement workers is 460 shown in table 2. In these sites workers are categorized as follows:

Table -1 Category of Cement Workers

S.No.	Category of Workers	Total No. of Workers	No of Sites
1.	Drillers	24	9
2	. Labour	67	20
3	Crusher	69	20
4	Garage And Office	128	17
	Total	288	20

Since, it was found that in 20 sites had a total of 24 drillers, 67 quarry pit, 69 crusher and garage and office is 128 number of workers. A total number of 288 workers in 20 sites .

Table-2 Category of Marble Workers

S.No.	Category of Workers	Total No. of workers	No. of Sites
1.	Drillers	61	5
2	Quarry pit	89	20
3	Crusher	142	20
4.	Salesmen	168	20
	Total	460	20

Since, it was found that in 20 sites had a total of 61 drillers, 89 quarry pit, 142 crusher and salesmen and shopkeeper is 168 number of workers. A total number of 460 workers in 20 sites.

2.4 Environmental Measurements sampling & analysis of Marble Dust

Twenty marble workshops were randomly selected in Jabalpur City for the study. Most of the selected workshops depend on the natural ventilation that varies from one to eleven workshops use exhaust ventilation. Workers in all workshops have never worn respirators. During 15 consecutive weeks, 4 inhalable marble-dust samples were measured daily for each of marble workshops (20 sites) twice per week.

2.5 Potential Health

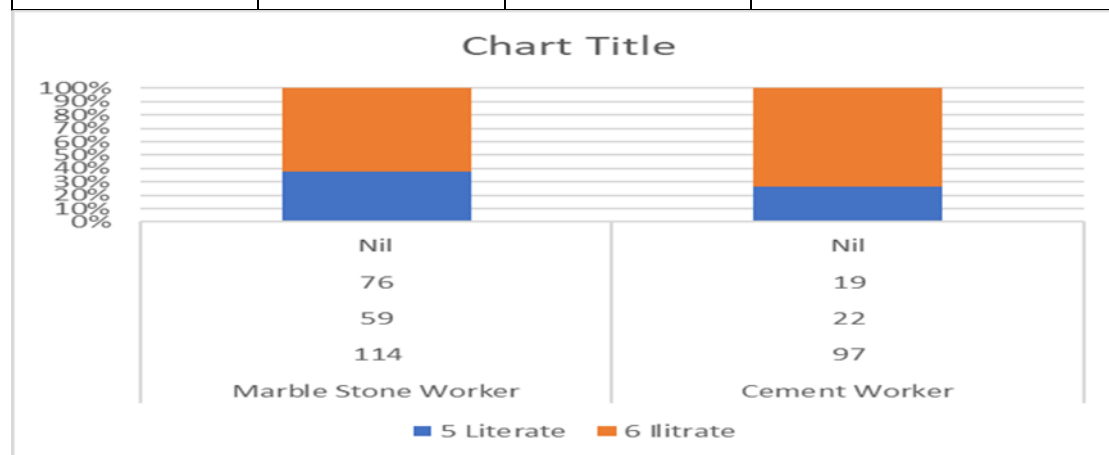
In the present study, personal respirable marble dust measurements were performed on 12 non-smokers marble workers selected randomly from the marble workshops.

3. Result and Discussion

The research was centred at people working in the marble cutting factory at Bhedaghat and various cement shops at Jabalpur city. In our study a total for cement 288 workers and 460 for marble rock workers were surveyed. For cement workers, all participants were divided into 5 age groups with 10 years age interval. Among the participants 77 were between 21 to 30 years, nearly 78 were between 31 to 40 years, nearly 49 were between 41 to 50 years of age and 27 were only male were above 51 years of age. Among total participants 39 were females, 192 were males and 27 were children.

Table.3 Socio-demographic profile study of cement and Marble stone workers

S.NO.	Sex	Marble Stone Worker	Cement Worker
1.	Male	114	97
2	Female	59	22
3	Children's	76	19
4	Educational Status	Nil	Nil
5	Literate	79	42
6	Illiterate	132	118



For marble workers, all participants were divided into 5 age groups with 10 years age interval. Among the participants 159 were between 21 to 30 years, nearly 69 were between 31 to 40 years, nearly 73 were between 41 to 50 years of age and 99 were only male were above 51 years of age. Among total participants 82 were females, 217 were males and 161 were children.

3.2- Diseased measured in cement workers— Present study Shows most common respiratory symptom complained by the workers of Marble shops was shortness of breath is 44 and chest pain 36 people effected but in cement worker this number are less as compared to marble stone worker.

Table.4 Common respiratory symptoms and use of protective measure present in cement workers

S.No.	respiratory symptoms	Number of workers
1	Shortness of Breath	32
2	Chest pain	6
3	Cough	18
4	Loss of appetite	6
5	Weight loss	4
6	Protective measured used	11

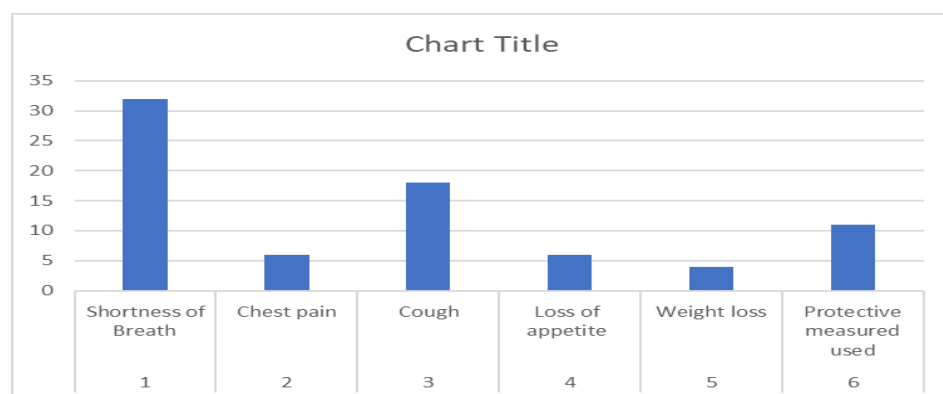
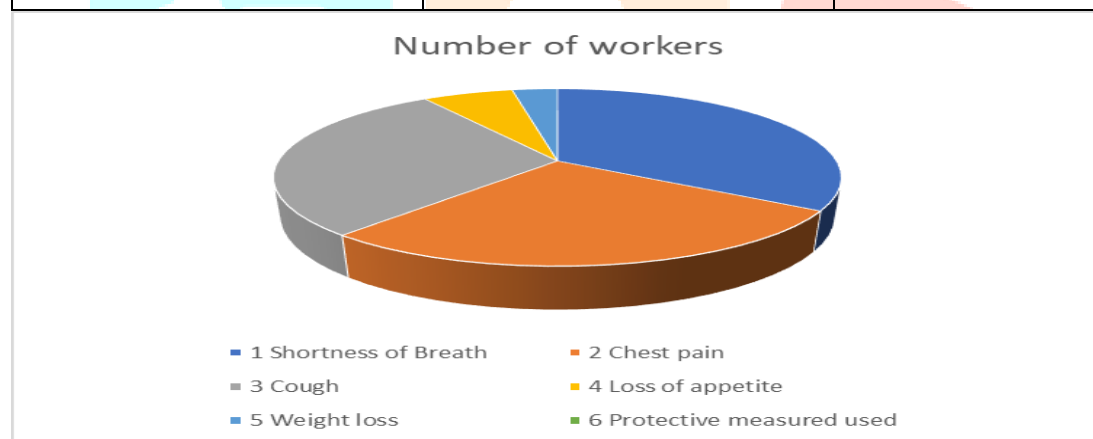


Table.5 Common respiratory symptoms and use of protective measure present in Marble Stone workers

S.No.	respiratory symptoms	Number of workers
1	Shortness of Breath	44
2	Chest pain	36
3	Cough	38
4	Loss of appetite	8
5	Weight loss	4
6	Protective measured used	0



Discussion—

In our study we found many people suffered so many respiratory diseases mainly silicosis due to long exposure of silica dust. Deposition of silica dust causes Shortness of breath, chest pain, cough and wheezing problems and deposition of dust on the skin and eyes will cause irritation and the eyes may develop conjunctivitis. Other factors that influence the health risks posed to quarry workers include particle size, composition and concentration of the dust, deposition location within the respiratory tract and the exposure duration.

Conclusion -- Marble production, as an industrial sector, has a great contribution to Jabalpur city gross national income due to both different activities of workshops (furniture and painting workshops), capacity and, marble reserve. In present study it is observed that most of the workers are affected by marble and cement dust that causes respiratory diseases. From environmental point of view, results indicated that marble industry has human impacts with environmental risks, however, marble workshops need an intensive evaluation to determine the certain norms to regulate their action and to control the possible impact produced.

References--

1. S. P. Tomar, A. P. S. Kushwah, +1 author P. S. Baghel A comparative study of pulmonary Koch's among marble stone worker community of Bhedaghat and nonmarble stone worker community of Garha Published 1 October 2014 Medicine International Journal of Medicine and Public Health
2. Jaykrishnan et al. Occupational Health Problems of Construction workers in India 2013 International Journal of Medicine and Public Health December 3(4):225-22 DOI:10.4113/2230-8596-123415
3. Rao VG, Bhat J, Yadav R, Gopalan GP, Nagamiah S, Bhondeley MK, et al. Prevalence of pulmonary tuberculosis: A baseline survey in central India. Int J Epidemiol 2009;38:1026-32

