

Work-Related Respiratory Symptoms among Cement Sellers in a Semi-Rural Community in South-South Nigeria

Erah F.O^{1*} Akpede N¹, Ajekwene V¹, Edeawe PE¹ and Taiwo A¹

¹Department of Community Medicine

Irrua Specialist Teaching Hospital

Irrua, Edo State

Nigeria

ABSTRACT

Introduction: Millions of people are working in a dusty environment generated by cement production, sale and use. The chronic exposure to this dusty environment causes respiratory symptoms in those chronically exposed to it including those directly working in the cement plant or sale outlet and neighbouring homes and individuals.

Objectives: The aim of this study was to assess the knowledge and prevalence of respiratory symptoms and to determine the preventive measures put in place by these sellers.

Methodology: A total of 118 cement sellers were sampled using a self-administered questionnaire. Data collected were analyzed using statistical package for scientific solution (SPSS) version 20. Cluster sampling technique was utilized in the selected of participants. Statistical significance was set at P less than 0.05.

Result: Findings from this study showed that the majority of respondents had good knowledge of respiratory problems associated with cement dust. Catarrh and cough were the most prevalent respiratory symptoms among respondents. PPE's were the most utilized protective measure.

Conclusion: The majority of respondents had good knowledge of respiratory symptoms. Catarrh and cough were the prevalent symptoms among respondents and nose mask was the most PPE used as protective measures.

Key Words: Knowledge, Prevalence, Respiratory Problems, Hazards, Preventive Measures.

1. INTRODUCTION

Production and utilization of cements generates lots of dust, which is the cause of respiratory manifestations in those chronically exposed to it [1-3]. The cement sellers are the high risk population responsible for the distribution of this invaluable products to members of the public. Cement dust production is well known to be responsible for respiratory symptoms as well as respiratory impairment if chronically exposed [4-5].

Cement dust is a particularly alkaline and irritant dust, and might therefore be considered to pose a greater risk of respiratory tract damage than many other poorly soluble dusts (generically often referred to as "low toxicity dusts") [6]. It is therefore important to assess the knowledge of respiratory problems associated with cement dust exposure amongst these sellers, who are mainly of low socioeconomic class with limited knowledge on what danger they face [1,6].

The severity of impairment of respiratory function has been shown to depend on years of exposure⁴. Exposure to cement dust has been reported to lead to a greater prevalence of chronic respiratory symptoms and a reduction of ventilatory capacity, the seriousness of pulmonary function impairment and respiratory disease has not been consistently associated with the degree of exposure⁶. The aerodynamic diameter of cement particle range from 0.05 - 5.0micrometre. This size is within the size of respirable particles and make the tracheobronchial respiratory zone the primary target of cement deposition, hence cement dust is important as a potential cause of occupational pulmonary disease. Regular use of appropriate personal protective equipment, if available at

the worksite, could protect cement sellers from adverse respiratory health effects [2,6]. A review of cement studies has indicated that cement sellers may be exposed to respirable dust levels, as high as 2 – 46mg/m³.² Ventilatory disorders are the most important group of occupational diseases associated with cement dust exposure³. Inhaled cement dust particles cause significant health risk, and this is dependent on the deposition pattern of the particles in the various regions of the respiratory tract and by the biological responses exerted by the deposited particles¹. Its deposition in the respiratory tract causes a basic reaction leading to increased pH values that irritates the exposed mucous membranes¹. There have been several studies suggesting an association between cement dust exposure, chronic impairment of lung function, and respiratory symptoms. Chronic exposure to cement dust has also been implicated in chronic obstructive lung disease, restrictive lung disease, pneumoconiosis, and recently, laryngeal and respiratory cancers [2,5].

2. SPECIFIC OBJECTIVES

1. To assess the knowledge of respiratory problems associated with cement dust exposure among cement sellers
2. To determine the prevalence of respiratory symptoms among cement sellers
3. To ascertain the protective measures put in place by cement sellers in Ekpoma.

3. MATERIALS AND METHODS

A descriptive cross sectional study design was utilized for this study of cement sellers in a semi-rural community in South-South Nigeria. A total of 118 respondents were study with the use of interviewer administered questionnaire. All respondents within the study area were recruited for the study and all respondents who met the inclusion criteria participated in the study giving a 100% response rate. The inclusion criteria were cement sellers who had at least one year work experience in the sale of cement in the study area but smokers or those with known respiratory disease prior to cement selling were excluded in the study. A cluster sampling technique was utilized in the sampling of participants. The study area was divided into clusters based on the settlement of the respondents. Four clusters were randomly selected by balloting from 9 clusters and all cement sellers within the selected clusters were recruited for the study. Prevalence of respiratory symptoms was determined by dividing the total numbers of respondents with respiratory symptoms by the total number of participants in the study while the knowledge of respiratory symptoms was determined by the points scored in the question on knowledge. Each correct respondents in the knowledge question was scored 1 point while each wrong response was scored zero point. The total maximum score on the knowledge questions was 10. Any respondents who scored 5 and above (50-100%) was regarded as having good knowledge while any respondent with less than 5 point (0-49%) was regarded as having poor knowledge.

4. RESULTS

About two-third (65%) of the respondents were of the age group 20-39 years while a few of them (0.8%) were less than 20 years. About two-third (58.5%) of them were married. About half (48.5%) had secondary level of education while a few of them (6.8%) had no formal education. Christianity was the predominant religion (91.5%). See table 1.

Majority had good knowledge of respiratory symptoms (79.7%). Cough and catarrh were the major symptoms presented by respondents (73.5% and 89.7% respectively). See table 2.

Majority of them (71.2%) use PPE and nose mask was the predominant PPE used by respondents(91.7%). More of those that use PPE had good knowledge of respiratory symptoms and this association was found to be statistically significant. $p < 0.05$.

TABLE 1; Socio-demographic characteristics of respondents

VARIABLES	Frequency n= 118	PERCENT
Age group		
<20	1	0.8
20 – 39	77	65.3
40 – 59	30	25.4
>60	10	8.5
Sex		
Male	108	91.5
Female	10	8.5
Marital status		
Single	47	39.8
Married	69	58.5
Widowed	2	1.7
Level of education		
None	8	6.8
Primary	30	25.4
Secondary	56	47.5
Tertiary	24	20.3
Tribe		
Benin	3	2.5
Esan	88	74.6
Etsako	10	8.5
Hausa	3	2.5
Ibo	9	7.6
Yoruba	5	4.2
Religion		
Christianity	108	91.5
Islam	8	6.8
ATR	2	1.7

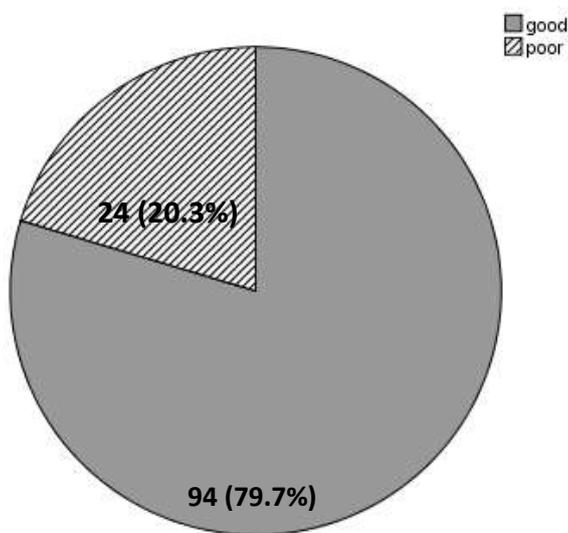


Figure 1; Knowledge of respiratory problems among respondents.

Table 2; Respiratory symptoms experienced by respondents

SYMPTOMS*	FREQUENCY n= 68	PERCENT
Cough	50	73.5
Phlegm production	25	36.8
Catarrh	61	89.7
Chest pain	36	52.9
Sneezing	22	32.4
Difficulty in breathing	19	27.9

* Multiple response.

Table 3; Use of PPE by respondents

PPE use	Frequency n= 118	Percent
Yes	84	71.2
No	34	28.8

Table 4; Type of PPE's used by respondents.

PPE type *	FREQUENCY n=84	PERCENT
Nose Mask	77	91.7
Face Mask	2	2.4
Goggles	5	6.0
Gloves	4	4.8

*multiple response.

Table 6; Aggregate knowledge and use of PPE by respondents.

KNOWLEDGE	Use of PPE		Total
	Yes	No	
Good knowledge	75	19	94
Poor knowledge	9	15	24
Total	84	34	118

 $\chi^2 = 16.67$, df= 1, $p < 0.05$

5. DISCUSSION

Findings from this study showed that two third of the respondents were within the age range 20-39 years. This is in tandem with a study carried out in Port-Harcourt Nigeria⁷. Similar results were recorded in studies done in Sokoto Nigeria¹, Ethiopia⁴ and the United Arab Emirates⁸. Reasons for this may not be farfetched as cement selling is a strenuous business that requires the strength in youthfulness to execute effectively. Also, cement selling offers a way to make ends meet, considering the high rate of unemployment amongst this age group in this part of the world. There were more male respondents in this study which is similar to studies done in Port-Harcourt⁷, Sokoto¹, and india⁶. This finding may be due to the strenuous nature of the job and the cultural norms, as per women carrying and lifting heavy load.

Majority of respondents had good knowledge of respiratory problems among cement dust exposure. This is in sharp contrast to studies done in Ethiopia⁴, Saudi Arabia⁹, India¹⁰, and the UAE¹¹, where they reported poor knowledge of respiratory problems among cement factory workers. With the majority of respondents in this study having good knowledge of respiratory symptoms, it is expected that they will put this to practice and prevent respiratory problems but this is hardly the case in reality as those who seems to have good knowledge may not put what they to practise especially if there is other prevailing social or cultural factors.

Just over half of the respondents admitted to have had cement dust related respiratory symptoms at one time in the past or the other. And of these symptoms, catarrh, cough and chest pain appeared to be the symptoms most suffered by respondents. This shows similar findings with studies carried out in Port-Harcourt⁷, UAE⁹, Iran³, and Palestine⁶. The increased prevalence of cough and catarrh amongst cement sellers comes with no surprise, as these are one of the earliest symptoms associated with respiratory problems. The reduced prevalence of difficulty with breathing as observed in this study and previous studies^{6,8}, may be due to the fact that it's a symptom associated with chronic/severe lung disease. Close to half of respondents claim not to have had respiratory symptoms in the past. The good knowledge of majority of respondents in this study may play a significant role in the prevention of respiratory symptoms among the respondents. However this might be far from the truth, as its common practice in this part of the world to dissociate oneself from disease, and most of these respondents probably responded "no" because they do not believe their jobs played a role in the respiratory symptoms they had in the past. Majority of respondents reported symptoms to have lasted for at most 7 days and most respondents had symptom frequency of once or twice per month. This is in keeping with the earlier finding of reduction in the prevalence of the symptom, difficulty with breathing, as symptoms lasting for >3 weeks will only imply a chronic/severe disease.

Most of the respondents are aware of protective measures and these measures are available at their shops. This is similar to a study done in Taiwan⁴, where protective measures were said to be available, however, respiratory problems were still common among workers. In this study, PPE is the most available protective measure at workplace, with majority of respondents admitting to its use. Nose mask is the most utilized PPE or in combination with other PPEs among the respondents. This is probably so because it's cheap and readily available.

In addition, findings from this study showed that most of the respondents who had good knowledge of respiratory symptoms used PPE, while two third of those who had poor knowledge didn't make use of PPE. This stresses the need for education of these cement sellers, to help improve their health behaviour, attitude and practices; and go a long way to minimize the health hazards associated with cement dust exposure.

None of the respondents had pre-employment medical examination, while most of them did not go for routine medical examination. This may be responsible for the behaviour of most of the respondents.

6. CONCLUSION

Majority of respondents have good knowledge of respiratory problems and cough and catarrh are the most prevalent symptoms reported by respondents.

PPE's are the most readily available protective measures at work place of respondents, and nose mask are by far the most utilized PPE.

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