

Knowledge and Awareness of Occupational Respiratory Diseases in Abia State, Nigeria

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ABSTRACT

Occupational respiratory diseases can occur at the workplace when workers inhale gaseous pollutants. This study was a cross-sectional descriptive study carried out in 2 urban centers of Abia State, Nigeria to investigate the knowledge and awareness of residents to occupational respiratory diseases. The simple random sampling technique was adopted to choose participants for the study. The residents gave an informed consent to be part of the study and were interviewed using a well-structured questionnaire. Results showed that out of 322 subjects that participated in this study, 277(86.02%) of the subjects responded “strongly agree” to “dusts and gases are emitted at aluminium plants”; 20(6.21%) responded “agree”; 301(93.48%) responded “strongly agree” to “inhalation of dusts and gases can cause respiratory problems”, 13(4.04%) responded “agree”; 291(90.37%) responded “strongly agree” to “exposure to high levels of CO can lead to death”, 30(9.32%) responded “agree”; 301(93.48%) responded “strongly agree” to “exposure to high noise levels can cause hearing loss”, 15(4.66%) responded “agree”; 309(95.96%) responded “strongly agree” to “long-term exposure to gases and chemicals can cause lung and renal diseases”, 7(2.17%) responded “agree”. It was concluded that residents in Abia State, Nigeria were aware that inhalation of dusts and gases can cause respiratory problems. Further studies in the rural centers of the country were recommended.

Keywords: Knowledge, Awareness, Respiratory diseases, Occupational diseases, Lung

INTRODUCTION

Respiratory diseases among workers who breathe high concentrations of contaminated air have been recognized for centuries. One group of occupational lung diseases, the *pneumoconiosis*, results when workers breathe dust that penetrates into the lungs, accumulates in the lung parenchyma, and causes pathological reactions. [1] These diseases include asbestosis from breathing asbestos, silicosis from breathing silica, coal workers’ pneumoconiosis from breathing coal dust, and berylliosis from breathing beryllium. Victims of these diseases typically suffer from shortness of breath, cough, and weakness and have characteristic findings on chest X-ray. These diseases are largely irreversible and often progress even after exposure has ended. A second group of occupational lung diseases affects the airways more than the lung parenchyma. [2] Occupational asthma is one example. Hundreds of exposures have been reported to cause occupational asthma, including exposures to chemicals. [2] Other causes are naturally occurring molecules found in biological matter, such as wheat and other grains, certain wood dusts and latex. [3] Occupational asthma was traditionally thought to result from long-term exposures, but in recent years immediate onset of asthma following acute, high-dose exposure to irritants such as that which may occur during chemical spills has been recognized. [4] A final category of occupational lung

disease is lung cancer. Many workplace exposures have been linked to lung cancer, including asbestos, diesel exhaust, chromium, nickel, and arsenic. [5] Symptoms of occupational lung diseases include coughing, shortness of breath, chest pain, chest tightness, and abnormal breathing pattern. [5]

Different types of particles produce different reactions in the body. Some particles such as animal dander can cause allergic reactions, such as hay fever-like symptoms or a type of asthma. Other particles cause harm not by triggering allergic reactions but by being toxic to the cells of the airways and air sacs in the lung. Some particles, such as quartz dust and asbestos, may cause chronic irritation that can lead to scarring of lung tissue (pulmonary fibrosis). Certain toxic particles, such as asbestos, can cause lung cancer, especially in people who smoke, or cancer of the lining of the chest and lung, regardless of the person's smoking history. The specific type of occupational lung disease depends on the environment to which the person is exposed. [6] Some people, particularly those with other lung disorders, are at risk when they are exposed to air pollution in the environment or to contaminants in indoor environments. Many more people are at risk of occupational asthma as a result of exposure in the workplace. Exposure to asbestos can cause asbestosis, and asbestos-related pleural disease. People who work with beryllium, such as aerospace workers, are at risk of beryllium disease and people who work with cotton, flax, or hemp are at risk of byssinosis. Coal workers and graphite workers are at risk of coal workers' pneumoconiosis. Workers who are exposed to silica are at risk of silicosis. Exposures to gas and chemicals may occur at work or in the home. In people who already have lung diseases such as chronic obstructive pulmonary disease (COPD) or asthma, exposure to substances in the environment may cause worsening symptoms even if the

substance itself does not cause lung disease.

Respirators and other measures do provide some protection. However, protection may not be complete and the protection varies from person to person. Respirators need to be checked once per year to ensure proper fit. Also, not all people can easily use protective measures. For example, respirators may limit the ability of people with heart or lung disorders to carry out job functions. Doctors encourage people who may be exposed to substances that can damage the lungs to be screened regularly so that disorders can be identified as early as possible. [7] Specific screening tests and the frequency of the screening depend on the substances to which the person is exposed. Screening can include medical examinations and measuring the person's breathing using spirometry, and measuring the amount of oxygen in the blood. Imaging of the lungs using chest x-rays or computed tomography (CT) may also be done. [8] The objective of this study is to determine the knowledge and awareness of occupational respiratory diseases in Abia State Nigeria.

MATERIALS AND METHODS

This study was a cross-sectional descriptive study carried out in Umuahia and Aba, two urban centers of Abia State, Southeastern Nigeria. The simple random sampling technique was adopted to choose participants for the study. The residents gave an informed consent to be part of the study and were interviewed using a well-structured questionnaire. Results were presented in tables.

RESULTS

Table 1 showed response of all the participants in Abia State, Nigeria on the knowledge and awareness of occupational respiratory diseases. From table 1, out of 322 subjects that participated in this study, 277(86.02%) of the subjects responded "strongly agree" to "dusts and gases are emitted at aluminium plants"; 20(6.21%)

responded “agree”; 301(93.48%) responded “strongly agree” to “inhalation of dusts and gases can cause respiratory problems”, 13(4.04%) responded “agree”; 291(90.37%) responded “strongly agree” to “exposure to high levels of CO can lead to death”, 30(9.32%) responded “agree”; 301(93.48%) responded “strongly agree” to “exposure to high noise levels can cause hearing loss”, 15(4.66%) responded “agree”; 309(95.96%) responded “strongly agree” to “long-term exposure to gases and chemicals can cause lung and renal diseases”, 7(2.17%) responded “agree”. From table 2, out of 146 participants in Umuahia, 127(86.99%) of the subjects responded “strongly agree” to “dusts and gases are emitted at aluminium plants”, 8(5.48%) responded “agree”; 141(96.58%) responded “strongly agree” to “inhalation of dusts and gases can cause respiratory problems”, 5(3.42%) responded “agree”; 136(93.15%) responded “strongly agree” to “exposure to high levels of CO can lead to death”, 12(8.22%) responded “agree”; 124(84.93%) responded “strongly

agree” to “exposure to high noise levels can cause hearing loss”, 7(4.79%) responded “strongly agree”; 137(93.84%) responded “strongly agree” to “long-term exposure to gases and chemicals can cause lung and renal diseases”, 3(2.05%) responded “agree”. From table 3, out of the 176 participants in Aba, 150(85.23%) of the subjects responded “strongly agree” to “dusts and gases are emitted at aluminium plants”, 12(6.82%) responded “agree”; 160(90.91%) responded “strongly agree” to “inhalation of dusts and gases can cause respiratory problems”, 8(4.55%) responded “agree”; 155(88.07%) responded “strongly agree” to “exposure to high levels of CO can lead to death”, 18(10.23%) responded “agree”; 157(89.20%) responded “strongly agree” to “exposure to high noise levels can cause hearing loss”, 8(4.55%) responded “strongly agree”; 162(92.05%) responded “strongly agree” to “long-term exposure to gases and chemicals can cause lung and renal diseases”, 4(2.27%) responded “agree”.

Table 1: Response of all subjects in Abia state on knowledge and awareness of occupational respiratory diseases

Information	SA (%)	A (%)	D (%)	SD (%)
Dusts and gases are emitted at aluminium plants	277(86.02)	20(6.21)	15(4.66)	0(0.00)
Inhalation of dusts and gases can cause respiratory problems	301(93.48)	13(4.04)	0(0.00)	0(0.00)
Exposure to high levels of CO can lead to death	291(90.37)	30(9.32)	0(0.00)	0(0.00)
Exposure to high noise levels can cause hearing loss	301(93.48)	15(4.66)	0(0.00)	0(0.00)
Long-term exposure to gases and chemicals can cause lung and renal diseases	309(95.96)	7(2.17)	0(0.00)	0(0.00)

SA- Strongly Agree; A- Agree; D- Disagree; SD- Strongly Disagree

Table 2: Response of subjects in Umuahia on knowledge and awareness of occupational respiratory diseases

Information	SA (%)	A (%)	D (%)	SD (%)
Dusts and gases are emitted at aluminium plants	127(86.99)	8(5.48)	6(4.11)	0(0.00)
Inhalation of dusts and gases can cause respiratory problems	141(96.58)	5(3.42)	0(0.00)	0(0.00)
Exposure to high levels of CO can lead to death	136(93.15)	12(8.22)	0(0.00)	0(0.00)
Exposure to high noise levels can cause hearing loss	124(84.93)	7(4.79)	0(0.00)	0(0.00)
Long-term exposure to gases and chemicals can cause lung and renal diseases	137(93.84)	3(2.05)	0(0.00)	0(0.00)

SA- Strongly Agree; A- Agree; D- Disagree; SD- Strongly Disagree

Table 3: Response of all subjects in Aba on knowledge and awareness of occupational respiratory diseases

Information	SA (%)	A (%)	D (%)	SD (%)
Dusts and gases are emitted at aluminium plants	150(85.23)	12(6.82)	9(5.11)	0(0.00)
Inhalation of dusts and gases can cause respiratory problems	160(90.91)	8(4.55)	0(0.00)	0(0.00)
Exposure to high levels of CO can lead to death	155(88.07)	18(10.23)	0(0.00)	0(0.00)
Exposure to high noise levels can cause hearing loss	157(89.20)	8(4.55)	0(0.00)	0(0.00)
Long-term exposure to gases and chemicals can cause lung and renal diseases	162(92.05)	4(2.27)	0(0.00)	0(0.00)

SA- Strongly Agree; A- Agree; D- Disagree; SD- Strongly Disagree

DISCUSSION

Majority of the residents interviewed in Abia State, Nigeria strongly agreed to the information that inhalation of dusts and

gases can cause respiratory problems. They also agreed that long-term exposure to gases and chemicals can cause lung and renal diseases. Mustapha et al. [9] reported in their

study that traffic air pollution contributed to respiratory illness among children. Due to the continuous exposure to carbon monoxide emitting from vehicles and generators, people are continuously exposed to air pollutants. People who work at places where carbon monoxide and other air pollutants are continuously emitted into the atmosphere must wear nose or face masks to minimize the inhalation of these pollutants. Thacher et al. [10] studied biomass fuel use among residents and the risk of developing cancer. They reported that children were at increased risk of developing or aggravating asthma attack as they are continuously exposed to pollutants emitted from biofuel. At the work place, people are exposed to various forms of occupational hazards. Gaseous pollutants which are inhaled can result to lung diseases. Studies [11,12] have shown that people who work in chemical factories where various gases are emitted are at increased risk of respiratory diseases. Sulfur dioxide exposure has been associated with reduced lung function, bronchoconstriction, respiratory symptoms, and hospitalizations from cardiovascular and respiratory causes, eye irritation, adverse pregnancy outcomes, and mortality. [13] People who breathe sulfur dioxide may develop more breathing problems as they get older, may make more emergency room visits for treatment of wheezing and may get more respiratory illnesses than is typical for others. Inhaling carbon monoxide gas can lead to severe respiratory problems as well as hypoxic injury, nervous system damage, and even death. Different people and populations may have different carbon monoxide tolerance levels. In Nigeria, carbon monoxide is one of the most common air pollutants that are inhaled by workers and residents. This is due to the fact that generators for power supply can be found in many work places and homes. The frequent power outages have made generators a necessity that every home and workplace must have to ensure power supply. With it comes the carbon monoxide that is being emitted. Some studies [13,14]

have reported both acute and chronic respiratory problems associated with workers who are constantly exposed to carbon monoxide poisoning.

Construction workers are exposed to dust, quarry and all forms of particulate matter. When these particles are inhaled, the lungs produce mucous to trap the particles and tiny hairs wiggle to move the mucous and particles out of the lung. The mucous leaves the airway by coughing or swallowing. If the particle is small and it gets very far into the lungs, special cells in the lung trap the particles and then they can't get out and this can result in lung disease, emphysema, and lung cancer. [15] The effects of inhaling particulate matter include asthma, lung cancer, cardiovascular disease, respiratory diseases, premature delivery, birth defects, and premature death. [16] Azuamah et al. [17] reported that workers involved in quarry activities were exposed to particulate matter with respiratory as well as ocular problems. It is important that people are aware of the respiratory disorders associated with work activities and the need to always wear protective equipment to protect themselves.

CONCLUSION

In conclusion, residents in Abia State, Nigeria were aware that inhalation of dusts and gases can cause respiratory problems. They also agreed that exposure to high levels of carbon monoxide can lead to death. Further studies in the rural centers of the country were recommended.

Declaration by Authors

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