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Analytical Review of Occupational Health Problems among Rice Mill Workers: The Role of Health Education

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Abstract
An ill workforce can only lead to low work output and invariably lead to an ill economy. Reports have it that over 170 days lost to absence of workers from work environments have been attributed to the workers' exposure to physical, chemical or biological agents in their work places. Among rice mill workers, these have led to various health problems ranging from musculoskeletal pains to conjunctivitis, pterygium, oesinophilis, leucosytosis, skin allergy and reduced PEFR among others. This paper reviewed the health problems, prevention, control and there after discussed the role of health education in dealing with the occupational health problems. The paper concluded that the health problems among the rice mill workers are remediable and as such, every effort should be garnered towards ensuring proper Occupational Health and Safety (OHS) procedures/practices within the work environments. The paper, thus, recommended among others, immediate deployment of health educators to sensitize the workers and their employers on the prevailing health problems in their work places thus, paving the way for disease early detection, prevention and control. These in effect would reduce morbidity and mortality rates among the rice mill workers.
Keywords: Occupational health, occupational health problems, Rice mill workers, Health Education.

Introduction

Occupational health is the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing departures from health, controlling risks and the adaptations of work to people and people to the jobs (International Labour Organization/World Health Organization, 1950). Recent reviews by the National Institute of Environmental Health Sciences (NHI, 2016) and WHO (2016), described occupational health as the identification and control of risks arising from physical, chemical and other workplace hazards in order to establish and maintain a safe and healthy working environment. It then follows from this, that, any activity, procedure or service which hinders the promotion, maintenance and control of workplace hazards thus endangering workers' health constitutes an occupational health problem.

Occupational health problem is responsible for yearly loss of over 170 million days to absence of workers from work places due to sickness (National Health Services, 2016). It was attributed to the workers' exposure to the physical, chemical or biological agents in their workplaces to the extent that the normal physiological mechanisms of the body are affected and the health of the workers jeopardized (Ontario Ministry of Labour, 2009). Health problems are supposedly caused by pathological responses of the workers to their working environment (Environmental Health and Preventive Medicine (PMC), 2014). Among numerous working environments causing occupational health problems among workers is the Rice Mill Industry where rice production takes place.

Rice happens to be a staple food of most families in both developed and developing countries of the world. It seems to be the largest consumed calorie source among the food grains. A grain of rice is made up of an external husk layer, a bran layer and the endosperm (Ahinsa, Singh, Bansode & Singh, 2014). Due to its nature, rice undergoes many processes from harvesting to the rice Mill Industry where most of the processes/activities completing its production are performed. These activities include parboiling (soaking) and steaming, drying and milling, de-husking de-hulling, storing of grains, drying the paddy before boiling, piling the paddy, cleaning the threshing floor, soaking tank with water and filling steam tank with water (Khatun, Abu, Hashmi, Abdul & Moshur, 2015). Other activities that pose dangers to the rice Mill Industry are firing of furnace and feeding husk fuel, lodging/unloading soaking tank with paddy, loading/unloading steaming tank with paddy, milling paddy with the huller, separating bran and weighing bags (Tirthanker, Somnuth & Banibraba, 2014; Khatun, Abu, Hashmi, Abdul & Moshur, 2015; Mohan, & Naima, 2016). These activities according to the authors, cause health problems to the rice mill workers.

Both the male and female rice mill workers in the course of their duties are exposed to many health problems. Prakash (2010), reported that the result of the clinical observations, socio-demographic profile and performance of peak expiratory flow, rate (PEFR), showed that rice mill workers investigated, had respiratory morbidity, reduced PEFR less than 200l/min, had low back ache and knee joint pain. Based on the study, some of the workers had generalized musculoskeletal pain and some of them suffered from allergic conjunctivitis and skin allergy. A statistically significant relationship (X2 of 8.99 is greater than table value of 5.99 at 0.05 level of significance and degree of freedom of 2) was found between year of working by the rice workers and respiratory condition.

Another study by Tirthanker, Somnath & Banibrata (2014), found rice mill workers to have complained of several types of respiratory disorders like phlegm, dyspnea, chest tightness, cough and nose irritation. The workers also presented significantly higher absolute oesinophil counts.

Mohan & Naima (2016) discovered that female rice mill workers who were involved in drying and helping in husking machine for about 8 to 10 hours, per day, had their performances reduced due to health challenges from the rice milling industry where they worked. The women's decreased performance was found to increase with age.

In a related study among rice mill workers between 20 and 65 years, a significantly greater proportion of rice millers were found to have conjunctivitis, pterygium, oesinophilis and leucosytosis (Ahinsa, Singh, Bansode & Singh, 2014). The study further revealed significant association of the various clinical signs and symptoms and hematological changes with occupational exposure to rice husk dust.

Ahinsa et al (2014) explained that the hematological disorders and their effects may be linked to both non specific irritation and allergic responses to rice husk dust. The husk as described by Ahinsa et al. (2014) is covered with needle-like hairs that project outward as share elongated spices tapering into sharp ends. The authors posited the likelihood of the husk structure to be probably the cause of the harmful effects of the rice husk exposure. Ahinsa et al (2014) therefore, suggested further epidemiological and pathological studies for the health and safety of the rice mill workers.

Khatun, Abu, Hashmi, Abdul and Moshur (2015) reported that lives were endangered in small scale commercial rice mills. This was attributed to the use of risky, substandard and unrequited boilers furnaces. Similarly, Amos (2016), expressed that the physical and demanding nature of the activities involved in the production of locally processing rice has affected workers' productivity and exposed them to various health risks such as burns encountered during the process of boiling rice in the mill.

A study by Sukhjinder, Roopam and Harkirat (2011), described respiratory disease arising from rice mills as acute and chronic disorder which occur due to the inhalation of air borne agents in the workplace. The authors maintained that many of the rice production processes produce air borne contaminants and their most common route of absorption is by inhalation. Sukhjinder, Roopam and Harkirat (2011) maintained that over a period of time, the inhaled dust would lead to proliferative and fibrotic changes in the lungs of its victim.

In a different view, Prasanna (2015) noted that noise, tends to be a major occupation hazard leading to serious occupational health problems such as loss and hard of hearing. Noise according to the author is common in rice mills from sources and activities of paddy cleaner, rubber roll Sheller, compartment separator, rice cleaner, auxiliary sieve shaker and an electric motor without enclosure. The noise pollutants are attributable to the use of a long flat belt drive, crank and pitman mechanism, absence of an electric motor enclosure, poor machine maintenance and inadequate acoustic design of the work room of the rice mill.

Despite the challenging health problems being encountered in rice production, its continuous production cannot be over ruled. In Nigeria, the recent position by the federal government on banning the importation of foreign rice invariably suggests big prospects for local rice millers in the country. By the development; it should be assumed that the government's expenditure would be channeled to utilizing the production capacity of the various rice millers across the country (Amos, 2016). Also, due to the embargo on importation of rice in Nigeria, rice farming and production in recent time have attained greater height in terms of increased number of rice farmers, millers and other rice processing workers (Amos, 2016). Based on the foregoing, rice workers vulnerability to the health problems as reviewed, cannot be overlooked. Moreso, the severity of the health problems when they occur, cannot also be overlooked thus, calling for urgent solutions to the health challenges confronting the rice mill workers. Undoubtedly, health education would play a major role in getting the workers and the public recognize the fatality of the health problems, what it portends to rice production, its work force and the nation at large.

Prevention and Control of Occupational Health Problems among Rice Mill Workers

The main goal of occupational health is maintenance of workers' health and increased productivity. Healthy workers increase industrial output and lower the cost of production (WHO, 2001). Workers constitute a

large sector of the population and for a nation to survive; its labour force should not be weak or ill. Sequel to this, WHO (2001) advocated three stages of prevention of occupational problems. The three stages are as thus:

Primary prevention: This is accomplished by reducing the risk of disease in the occupational setting. It is done by reducing the magnitude of exposure to hazardous substances. As the exposure is reduced, so is the risk of adverse health outcomes. WHO (2001) posited that such reductions can be typically managed by industrial hygiene personnel. They are also best accomplished by changes in production process or associated infrastructure such as the substitution of a hazardous substance by a safer one or enclosure or special ventilation of equipment or processes that liberate air borne hazards. This is termed engineering control (WHO, 2001).

Tirthanker (2014) also supported this aspect of primary prevention by expressing that it is advisable for rice mill workers to adopt technical preventive measures such as having well ventilated working areas and wearing appropriate respiratory protective devices. In the author's view, it would help in preventing lung damage which often and overtime, contributed to morbidity and mortality among the workers. WHO (2001) also identified other primary preventive measures as exposure reduction among workers by rotating workers through areas in which hazards are present to reduce the dose to each worker. The author however, noted that the method increases the number of workers exposed to hazards.

Secondary prevention: This can be accomplished by identifying problems, knowing workers that are susceptible to the workplace disease threat before the diseases become clinically apparent or the workers' report of being ill. This is known as occupational disease surveillance (WHO, 2001). It can be done through periodic medical surveillance tests among the workers (Tirthanker, 2014). The underlying assumption is that early detection will result to a more favourable outcome.

Tertiary prevention: This stage of prevention is achieved by minimizing the adverse clinical effects on health by a disease or exposure (WHO, 2001). The essence normally is to limit symptoms or discomforts, minimize injury to the body while on the other hand, maximizing functional capacity of the worker. Among rice mill workers, preventive measures such as dressing in layers and ensuring that the head, feet, hands and face are covered to prevent direct injury to the body. Apart from undertaking appropriate noise control measures, preventive maintenance of machines needs to be given due importance in all the rice mills (Prasana, 2015).

Tirthanker (2014) specified other preventive measures such as establishing health and safety policy that will create the ground for workers safe and healthy work environment. The policy would ensure that rice mill workers have a working environment free from all sorts of risks/threats to their health. Tirthanker (2014) further posited that workers should endeavour to follow all health and safety policies and adhere to safe working practices. Workers should report any perceived hazard in their work place and report any injury, or accident or health problem encountered in their working environment. Every effort should be made also by the rice mill workers to use and maintain properly, any protective equipment issued to them (Tirthanker, 2014). Furthermore, the use of all types of illegal drugs (Psychoactive drugs) should be avoided by the rice mill workers while working and appropriate authorities should not permit the use of such drugs within the rice mill industry. In all accidents and injury occurrences, the victims should report to the mill authority that would on their part, investigate properly to avoid a repeat of the accident/injury/health problem (Tirthanker, 2014). The author further stated that for workers with occupational health problems, rehabilitation services aimed at returning them to normal life functions should be provided. In this regard, Tirthanker (2014) concluded that affected workers should co-operate with the rehabilitation team as instituted within the working environment.

Khatun et al (2015) advocated that in case of hearing loss or hard of hearing brought about by exposure to outrageous noise of machines, that hearing protective device should be worn by workers especially when the noise exceeds the noise exposure standard. Such devices must be worn at all times in designated areas to protect hearing and also to protect workers from noise capable of inducing hearing loss. Khatun et al. (2015) concluded by advocating for periodic hearing test and audiometric testing for the workers. Prasanna (2015) maintained that since workers in the rice mill are exposed to high noise capable of causing hearing damages, appropriate noise control measures and preventive maintenance of machines ought to be in place in all rice mill industries.

On eye protection, Occupational Health and Safety Handbook (2007) called for the use of eye protection in order to prevent serious eye injuries. It was further advised by the author that signage should be displayed in areas when the device is to be worn.

Role of Health Education

The fitter a worker's health, the better his performance on the job (Olanrewaju, 2012). It has been shown that the high vulnerability of workers to occupational health hazards and eventual problems are largely due to insufficient knowledge on how to manage the risks at workplace and the unsafe behaviour of both workers and their employers (Hu, Lee, Shiao & Guo, 1998). It was further pointed out by the Hu et al (1998) that workers who do not undertake occupational health education programmes were five times more likely to encounter occupational problems than those who undertook the programme. In another study in Nigeria, Isah, Azuzu and Okojie (1996)

observed that the practice in some work areas is that workers learn knowledge and skills regarding occupational health and safety (OHS) informally from co-workers and employers. When this occurs, it implies that the workers may not be well informed on how to manage the risks at workplace. It then means that in some work environments where the preventive measures are on ground, workers are not well informed through health education by well trained health educators on the usage of the preventive measures (Siddika, 2012). In Nigeria, most of the rice mill workers at the point of entry and due to the casual nature of their jobs, are not always trained or educated on the health problems that are associated with their jobs, how to manage the risks (Bankole, 2008). Bazas (2001) observed that health education in workplaces is scanty despite the fact that it is a sine qua non of good occupational health practice.

Health education is a profession of educating people about health (Ememabasi & Ikorok, 2016). Apart from being fundamental to satisfying workers basic rights to be protected from hazards, it is also a statutory requirement in all work environments. Nayar, Kelly & Lewis (1997) found health education to play a crucial role in conveying the knowledge required for the prevention of rice mill workers health problems and diseases and the opportunity to lead a full normal life physically, mentally and socially. In the views of Ereh and Bassey (2009), human behaviour at work could be modified through health education. Ememabasi and Ikorok (2016) highlighted the role of health education through health educators in curbing and controlling diseases of all sorts, occupational health problems of rice mill workers inclusive. Some of these roles include creating awareness among the rice mill workers on the existence of certain health challenges in their work environment. Getting the workers educated on the causes of such health problems as dictated by the activities they engage in as well as sensitizing them on the preventive measures, safety equipment and other resources available to tackle the health challenges. Through health education, the workers can also be taught first aid treatment and procedures during emergency situations within the rice mill environment.

Conclusion and Recommendations

Based on the reviews, workers at the rice mill industry are faced with many health problems due to the nature of the activities they indulge in. In doing the rice mill jobs, many are oblivious of the severity of the health threats not until an illness status crops up on them. Nevertheless, the health problems are not without remedies. Most of them can be prevented and controlled if occupational health and safety procedures are followed. The role of health education in ensuring this cannot be overemphasized. Through health education, the workers are better equipped with factual information on occupational and safety rules/policies to guide them in maintaining and promoting their health even as they engage in their daily rice mill activities. The following recommendations are thus made:

1. The government should carry out immediate deployment of professional health educators into various rice mill industries in order to plan and executive a health education programme aimed at sensitizing the workers of prevailing health problems associated with their jobs.
2. The government at the local, state and federal levels as well as employers of labour should take up the responsibility of supplying protective eye, ear, and nose devices to various rice mill industries within their coverage in order to eliminate or reduce incidents of injury to the concerned organs. The devices can be acquired by the rice mill workers at subsidized rates.
3. The government in collaboration with NGO(s) and private agencies should build medical centres within the rice mill premises in order to carter for the health needs of the workers at any point in time.
4. The government (local, state or federal), NGO(s) in collaboration with employers in the rice factory should organize periodic surveillance tests. This would pave for early detection and treatment of any prevailing illness among the rice mill workers.
5. Government should provide an endowment fund for those injured in the course of working in the mills.
6. There is also need for the inclusion of health insurance scheme by the government for rice mill workers in order to ease their hardship in accessing health services.

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