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Work-Health Imbalance among Female Rice Mill Workers in Southeast Nigeria

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ABSTRACT Rice mills are full of health risk and women are the most vulnerable. Rice production process is hazardous. Abundant dust exposes women to health problems. Therefore, the focus is to identify health hazards facing women working at rice mills and their level of awareness of such hazards. A cross-sectional survey was carried out with 400 women selected from Abakaliki rice mills through stratified random sampling. Data collection was through self-structured questionnaire. Descriptive statistics was used for the analysis. The result revealed that these women actually face various health challenges. However, most of them were unaware that their health challenges result from their job. Generally, occupational morbidity is high among women working at rice mills because of long exposure to the hazards and their lack of awareness. Therefore, awareness generation, promotion of the use of protective devices and provision of work-related medical checkup are necessary to achieve the right outcome.

INTRODUCTION

Work occupies a prominent place in the lives of humans because it is work that sustains life. The importance of work in human lives explains the wide interest of researchers and philosophers in the economic activities of humans and how these activities impinge on the health of the workers. While work is considered necessary for human existence, it however harbors certain threats and risks that are harmful to the workers and at times to the environment around the work place. Such risks faced by workers may lead to diseases, physical, emotional and psychological disorders, all of which affect the health and wellbeing of the workers adversely.

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When the work place involves risk, women are usually the most affected. The constant harm faced by women in the workplace has continued to attract the interest of medical anthropologists, industrial sociologists and industrial relations experts. Across the world, female workers are faced with many health challenges occasioned by certain dangerous conditions inherent in their workplaces. The health problems, however, are not the same for every individual, workplace and locality (Yusuf 2011). In the developing world, Nigeria inclusive, women are faced with many challenges including ill-health, socio-cultural hiccups and exploitation at workplaces (Yusuf 2011). In most cases, there is no policy to regulate the activities at work places including rice mills.

Rice milling is the process of removing the hard, rough, and brittle husk that covers the rice grain, and the cuticle. This is done primitively by pounding and winnowing or in the improved practice of passing the rough rice between millstones and then separating the grains through a special machine called a 'huller.' The grain thus treated is said to be cleaned (Ezekiel 1990). How-

ever, the workers who produce the clean grains end up unclean health wise.

Generally, the process of producing rice (*orza sativa*) is usually long and tedious. Rice is usually harvested first, then threshed and dried before other processes can commence. The product is named paddy rice. Such paddy rice must be dried leaving not more than 18 percent moisture in it. The next step is to parboil (partial boiling) the rice. This is done to weaken the rice hull for easy removal and to prevent the rice from breaking during hulling. Then, the rice is carried to the mill for pre-cleaning, destining, husking/de-hulling, husk aspiration, paddy separation, whitening, polishing, length grading, blending/mixing, weighing and bagging (Ezekiel 1990). In all these processes, women are involved.

In recent times, the production of rice in Nigeria has increased significantly. According to Ahmad (2015), local rice produced in Nigeria has reached 15 million metric tons. In recent times, the total rice production in Nigeria was estimated to be about17, 487, 562 metric tons (Izuora 2018). This is why it is believed that Nigeria is on the verge of attaining self-sufficiency in rice production. The success is hinged on the Central Bank of Nigeria's Anchor Borrowers Programme. The country is actually working hard to achieve self-sufficiency in rice production. However, the higher the production effort, the more the challenges faced by the workers. But corresponding effort has not been made to gauge the health challenges encountered by workers (especially women) at the rice mills who make these ambitions possible.

In other words, as rice production increases, the happier the government and the rice consumers in Nigeria are. To the average Nigerian, rice does not require any introduction. It is actually the most cherished food and it is consumed in different forms by both the high and low. This position of high production of rice was attained as a result of steady demand by Nigerians for both domestic and commercial consumption. Rice has actually become a staple food in Nigeria. This is because of the fact that there have been dietary changes, growths of urban centres and rise in the people's income. This has led to rise in the demand, which stands at an annual growth rate of about five percent (Agronigeria 2018).

Interestingly, in West African sub-region, Nigeria is the highest producer of rice coming behind Egypt and Madagascar. Nigeria is also the highest consumer of rice in West Africa. At present, the level of importation of rice in Nigeria has drastically reduced. The government is saving a lot of revenue as a result of this. Therefore, if the amount of money realized from non-importation of rice in the present time is channeled towards the improvement of the health of rice mill workers, particularly women, production will definitely increase and be sustained over time (Agronigeria 2018).

Rice is mostly produced in Ebonyi, Sokoto, Ogun, Enugu, Anambra, Niger and Kogi states of Nigeria. Some other states engage in rice production minimally. The rice mill in Abakaliki, Ebonyi State is always a beehive of activity. Currently, the mill boasts of over 5,000 workers, 2,500 rice milling machines and a production capacity of more than 11,000 tons. The company, which began in 1967, had its first milling machine procured by Mr. Anekwe Bestman. At the rice mill industry, there are various activities that involve machine operation, carrying of dust, stitching of bag, loading, wheelbarrow pushing, on-loaders, accounting, supplying of water, security services and so on (Ezekiel 1990; Oginyi et al. 2017).

The mill houses rice blowers, rice millers, rice blenders, rice de-stoners, dust/rice husk carriers, bag snitchers, barrow pushers, loaders, off-loaders and rice sellers. Women are mostly involved in all these activities, all of which have health implications. Abakaliki Rice Mill's capacity is 35,000 metric tons of quality paddies. Female workers in Abakaliki rice mill industry mostly perform the role of carrying the dust or husk out, stitching the rice bag, blending the rice, de-stoning the rice, supplying water and the host of others (Ezekiel 1990).

Women sustain one form of accident or the other in rice mill industries; therefore, it is necessary to understand the dangerous conditions that these women face at their workplaces with the aim of reducing accidents, injuries and other health problems that they may encounter at rice mills. It is clear that women constitute a high percentage of the workforce at rice mills. As a result, this paper assessed the various health challenges faced by women at rice mills with emphasis on the types of health challenges they encounter and their level of awareness of such problems, as well as their ability to make use of protective devices.

Socio-economic and medical consequences of occupational health challenges have been of major concern to all those who are interested in industrial affairs. Various measures have been taken to prevent, control, reduce or eliminate problems and risks at the workplace over the years. In spite of all these, occupational health problems are still frequent, causing both human and economic loss. According to ILO's report about 2 million occupational hazards occur all over the world annually. However, WHO has reported a decline in occupational accident/diseases in developed nations and an increase for developing nations (Alli 2008).

According to Rana et al. (2018), women workers at rice mills constitute a special and vulnerable group from the angle of industrial health. The abundant dust they inhale usually affects their respiratory system adversely. Dawoodpoto (2018) also pointed out that ash particles and mud coming out of rice mills are hazardous to women's health in particular and rice mill workers in general. It has been discovered that in spite of these, the environmental agencies and even the owners of the rice mills have never taken any action to install required equipment to prevent infections in the industry.

The obvious morbidities discovered among women working at rice mills include chronic bronchitis, allergic bronchitis, low backache and knee joint pain. Respiratory morbidity is quite common among women rice mill workers. This is usually attributed to constant exposure to dust by these women. This is because rice mill usually expose the respiratory system to various elements such as dusts, bacteria, endotoxins, spores, chemicals and so on in the course of work (Prakash et al. 2010; Eshwaramma 2016). These ailments in the long run tend not only to reduce productivity but also the life span of the women.

In a recent study on rice mill workers in Ebonyi State Nigeria, Oginyi et al. (2017) assessed occupational health hazards and the use of safety measures among rice mill workers and they discovered that the workers do suffer backache, headache, cough, catarrh, skin rashes, eye injuries, tuberculosis, asthma and other respiratory tract infections. According to them, the rice mill workers also suffer physical injuries like bruises, wounds and even amputation. Similarly, Ansari et al. (2017) pointed out that these chronic and acute problems faced by rice mill workers especially women is as a result of lack of policy guide lines for rice mills establishment and operations. Women rice mill workers are constantly exposed to health hazards at various stages and at all sections of the rice mills during operation. This is why Fatima et al. (2016) explained that some occupational health challenges are expected in rice mills and that these issues include excessive workload, physical assualt, asthma, headache and volatile organic compounds in blood. From all these, it can be seen that rice mill workers particularly women suffer various health challenges that have been going on unattended to. These scholars have x-rayed these health challenges but none has narrowed it down to women working at the rice mills. None of them tried to measure the level of the workers' awareness of these health problems associated with their work.

On the other hand, in rice mills, environmental health and safety regulations are not implemented. Rice processing/production are associated with various environmental issues such as air pollution, water pollution, and noise pollution. All these have caused serious health challenges like deafness, lung diseases, allergic skin diseases and respiratory disorder among the workers. The major causes of these problems are non-implementation of safety measures, new technologies and low level of awareness among the workers. Lack of implementation of occupational health and safety regulations do not only impact the environmental conditions, but also affect the workers' health at the workplace. It has been reported severally that in the farm setting, exposure to dust particles do cause hematological disorders. As a result, female workers at rice mills, who are exposed to rice husk, may have hematological parameters infected. Exposure to rice husk has been severally linked with diseases because rice husk has high quantity of silica which can cause damage to the bronchial passage and alveolar walls of the throat (Shobha 2012; Levy and Wegman 2000).

In spite of all these, adequate and holistic assessment of the health hazards faced by women working at rice mills is still lacking in Nigeria. Some scholars study all the workers at rice mills without recognizing women's physiological and anatomical peculiarities. This is quite unfair because women's health at work is considered a very important issue by virtue of the role they play in the overall national development (Amali

2006). It should be understood that while humans are the backbone of the economy, women make up more than half of the human resources in Nigeria. Again, Sultana and Afrad (2014) studied women participation in rice mills at Sherpur Sadar Upazila of Bangladesh and found that women are mostly involved in drying and helping in husking machine operation, drying of paddy, piling the paddy, cleaning the threshing floor and packing the rice. This shows that women at the rice mills are constantly exposed to environmental hazards at the rice mills. These scholars also pointed out that the women workers' performance decreased with the increase in their age. However, they did not realize that early aging and low productivity could be among the health challenges that these women are constantly exposed to. In spite of these numerous health challenges, Zaman et al. (2006) in their study in Bangladesh also found that there was no health checkup facility for the women working at rice mills. In other words, there was no physician appointed to carry out medical services/advice to the rice mill workers. This is why the present study focused attention on women working at rice mills with the aim of identifying and evaluating the health and safety hazards that affect them in the industry as well as their level awareness of the occupational dangers they faced.

Objectives

The study was aimed at identifying the health risks faced by female workers at rice mills in Nigeria. The study also attempted to determine the level of awareness of these women about the occupational hazards involved in their job, determine the safety measures applied by the women during operations and suggest ways of preventing/managing such health hazards.

The study becomes necessary because as the production of rice in Nigeria is increasing, so also are the dangers faced by women at the rice mills. Therefore, if measures are not urgently taken to preserve the life of women working at rice mills, we may end up having high reduction in rice production as result of ill-health and/or death of the workers. The outcome of the study is expected to provide useful information for rice mill workers, rice mill managers, industrial sociologists, industrial psychologists and even health institutions; to increase their level of awareness of these health hazards and the best way to manage them. Similarly, government officials, policymakers and non-governmental organizations (NGO's) will use the study as a guide in their policy making as it affects women working in rice mills. These will help them make better policies and rules that will be favorable to these women in order to improve their lives, productivity and the economy in general.

Hypotheses

- ***Hypothesis 1:*** There is no significant relationship between women working in rice mill and health hazards.
- ***Hypothesis 2:*** There is no significant relationship between lack of knowledge of health hazards at rice mill and the prevalence of health challenges.

MATERIAL AND METHODS

Participants

From a population of 1048, a sample size of 400 participants (women) was selected using Taro Yamani's formula. Women were chosen because they constitute a high percentage of the workforce at rice mills. They are mostly involved in drying and helping in husking machine operation, drying of paddy, piling of the paddy, cleaning the threshing floor and packing the rice. Each of these activities presents health challenges for the women. Again, the women's physiological makeup makes them more susceptible to infections coupled with the fact that they also retire to their various homes to continue with domestic chores on daily basis. The study was conducted at Abakaliki Rice Mill Industry in Abakaliki Southeast, Nigeria. This site was chosen because it is major cluster of rice mills in Abakaliki and it has existed for over fifty years. Stratified random sampling was used in the selection process. Women working at Abakaliki rice mill were stratified into Group A and Group B and then respondents were selected at random for the study. The Group A represents those from the first gate of the rice mill and Group B represents those from the second gate of the rice mill industry. That is, 200 participants were selected from Group A and 200 from Group B. This procedure offered equal opportunity to select participates for the study free of bias or

influence. The study was conducted between July and December, 2018.

Instruments

The study involved a cross-sectional survey. A refined self-structured questionnaire was used to collect the information about demographic characteristics, the nature of illness suffered by the women, their level of awareness about the relationship between their work and the illnesses and the rate at which they use protective devices during work. A five-point Likert scale was used to obtain responses from the research participants. The answers provided were either "positive" or "negative" because neutral responses were ignored because they would not have effect on attitudinal grading. Each question in the questionnaire was arranged with the positive and negative option, while the neutral option was fixed in the middle for respondents who do not know whether to select the positive or negative option. Each of the Likert responses "strongly disagree", "disagree", "neutral", "agree" and "strongly disagree" were given an attitude score, with a 1-5 score assigned from the most "negative" to the most positive" response. In other words, the corresponding questions were designed in such a way that the higher the Likert score, the more the variable being tested. In addition, the questionnaire was structured in a manner that caused no discomfort, anxiety, or harassment to the respondents. The questions were not dehumanizing or demeaning. The questionnaire ensured confidentiality of the participants by not requiring the names of any respondent. The Ethics Committee of Alex Ekwueme Federal University, Ndufu-Alike Ikwo assessed the instrument and approved that it should be used for the study.

Procedure

The researchers sought approval and informed consent from the research participants without inducement. They were informed about the purpose of the study, the information the researchers wanted from them, why the information is being sought and for what purpose. Only those who voluntarily accepted to participate were used for the study. The participants filled the questionnaire on the paper. However, for those who were unable to write, the questions in the questionnaire were read to them and their responses filled on the paper. It took a maximum of 50 minutes to fill the questionnaire.

Data Analysis

Analysis was done using descriptive statistics. The scores were calculated in percentage. Any point from 50 percent and above indicates agreement with the variable. However, chi-square test was applied to establish the strength of the relationship between the women's level of awareness of health hazards in their work place and their health conditions. The rule is that if p-value is less than 0.05, then we should reject the null hypothesis.

RESULTS

During the study, four hundred (400) copies of questionnaires were distributed, but three hundred and seventy five (375) copies were retrieved, of which ten (10) copies were discarded due to incorrectness and incompleteness, leaving a total of three hundred and sixty (365) copies of the questionnaire for analysis.

Demographic Characteristics

At first, the respondents were classified according to age. The analysis revealed that majority of the respondents (43%) were within the age bracket of 40-49 years, followed by those whose age group fall between 30-39 years (37.5%), while 0.5 percent were less than 20 years. The analysis also revealed that respondents who were 50 years and above were 17.3 percent (see Table 1).

As regards the marital status of the respondents, the analysis revealed that majority of the respondents (32.6%) were married, and only very few (15.3%) were still single. Since level of education has effect on a person's level of awareness, the study sought to find the educational level of respondents. The result indicates that, majority (62.5%) are secondary school leavers, while those who attended tertiary institutions were very few. That means those with either no formal education or primary education were 29.4 percent of the sample.

The findings also revealed that majority of the respondent (73.4%) had worked for 3-7 years in the rice mill industry. In other words, 97.3 per-

Table 1: Social demographic characteristics of respondents (N=365)

Variables Categories	*Frequency*	*Percentage*
Age Range		
<20 yrs	2	0.5
20-29 yrs	6	1.6
30-39 yrs	137	37.5
40-49 yrs	157	43.0
< 50 yrs	63	17.3
Marital status		
Single	56	15.3
Married	119	32.6
Divorced	83	22.7
Widowed	107	29.3
Educational Status		
No formal education	63	17.3
Primary	44	12.1
Secondary	228	62.5
Tertiary	30	8.2
No. of Years @ Rice Mill		
< 2	10	2.7
3-6	268	73.4
7-10	32	8.8
>10	55	15.1
Working h/wk		
21-30 hrs	36	9.8
31 - 40 hrs	89	24.4
> 41hrs	240	65.8

Source: Field Survey 2018

cent of the respondents had worked in the rice mill for 3 or more years. Therefore, they are fully experienced about the activities in the industry and have also been exposed to the health challenges involved in such workplace.

On the other hand, the study assessed the number of hours that the women worked per week. It was found that majority of them (65.8%) usually put in >41 hours per week. In other words, these women are exposed to the health hazards for > 2952 hours in a year at the rice mills (see Table 1).

Women Workers at Rice Mill and Their Health Challenges

The study investigated the health challenges faced by women working at rice mills. It can be deduced that women working at Abakaliki rice mill are faced with several health challenges. This is seen as the agreement level of most of the factors leading to health risks are above 50 percent. We can also see that the acceptance level for asthmatic attack, Chronic bronchitis and irregular menstrual period falls below 50 percent and this means that though the women working at rice mill are faced with several health risks, there are some chronic diseases they do not experience by working at the rice mill. Therefore, whenever the agreement level is > 50 percent, the decision is positive and vis-visa (see Table 2).

The Women's Level of Awareness of the Occupational Health Hazards Involved with Working at Rice Mill

It is considered pertinent to consider the extent to which women rice mill workers are aware of the health problems that confront them during their work. Table 3 clearly portrays this. Where the total agreement level is < 50 percent, it means the level of awareness is low. The results therefore show that women working at Abakaliki rice mill are unaware of the occupational health hazards they face by working at rice mill. In all variables tested, they showed poor level of awareness. Since they are ignorant of the occupational health hazards in Abakaliki rice mill, they tend not to take serious precautions against such hazards.

Safety Measures Used by Women Working in Abakaliki Rice Mill

The analysis in Table 4 revealed the level of compliance in the use of safety measures. On the nine point variables tested, the level of compliance was poor except for covering of hair (79.2%). In actual sense, the covering hair was as a result of culture rather than as a protective device. Therefore, the result indicates that women working at the rice mills hardly use these safety appliances to checkmate occupational hazards. It can be seen that none of them has ever used protective eye glasses or protective shoes/boots. This clearly indicates that women working at the rice mill are exposed to great deal of health risks.

Hypotheses Testing

The proposed hypotheses were tested to establish the extent of relationships among variables in the study. The test of hypotheses was done using the Chi-square (χ^2 method and regression analysis due to its relevance in the test, bearing in mind the Decision Rule, which states thus: Reject H_0, if P-Value is less than 0.05.

Table 2: Health risk faced by women workers at the rice mill (N=365)

Variables (Health challenges)	*Agreement*	*Disagreement*	*Decision*
Always sick	258 (70.7%)	107 (29.3%)	+
Chronic cough	256 (70.1%)	109 (29.9%)	+
Constant Catarrh	256 (70.1%)	109 (29.9%)	+
Asthmatic attack	61 (16.7%)	304 (83.3%)	-
Bad sight	59 (16.1%)	306 (83.9%)	-
Hearing disability	255 (69.8%)	110 (30.2%)	+
Severe waist pain	329 (90.1%)	36 (9.9%)	+
Severe backache	331 (90.7%)	34 (9.3%)	+
Skin irritation	277 (75.9%)	88 (24.1%)	+
Chronic bronchitis	150 (41.1%)	215 (58.9%)	-
Chest Tightness	192 (52.6%)	173 (47.4%)	+
Severe grain fever	247 (67.7%)	118 (32.3%)	+
Physical injury	323 (88.5%)	42 (11.5%)	+
Coughing out brown sputum	282 (77.2%)	83 (22.8%)	+
Severe pains all over the body	254 (69.6%)	111 (30.4%)	+
Irregular menstrual period	142 (39.9%)	223 (60.1%)	+
Rough skin	329 (90.2%)	36 (9.8%)	+

Source: Field Survey 2018

Table 3: Level of awareness of occupational health hazards at rice mills (N=365)

Variables (Level of awareness)	*Agreement*	*Disagreement*	*Decision*
Accidents at the rice mill	107 (29.3%)	258 (70.7%)	-
Eye problems	48 (13.2%)	317 (86.8%)	-
Hearing impairment	78 (21.4%)	287 (78.6%)	-
Severe respiratory problems	127 (34.4%)	238 (65.6%)	-
Severe body pains	82 (22.4%)	283 (77.6%)	-
Skin problems	50 (13.7%)	315 (86.3%)	-
Asthmatic attack	48 (13.2%)	317 (86.8%)	-
Weight loss	52 (14.3%)	313 (85.7%)	-
Germ infections	82 (22.5%)	283 (77.5%)	-

Source: Field Survey 2018

Hypothesis 1

Ho: There is no significant relationship between women working in rice mill and health hazards.

Result: 2 cells (25%) were expected to have count less than 5. The minimum expected count is 0.83.

Decision: Since $\chi^2 = 87.347$, DF = 3 and P-value (0.000) is less than 0.05, we reject the null hypothesis (H_o) and conclude that there is a significant relationship between working at rice mills and health problems (see appendix). Therefore, women who work at rice mills are exposed to health risks.

Hypothesis 2

Ho: There is no significant relationship between level of awareness of health hazard at rice mill and the prevalence of health hazards.

Result: 17 cells (68%) were expected to have count less than 5. The minimum expected count is 0.01.

Decision: Since $\chi^2 = 375.136$, DF = 16 and P-value (0.000) is less than 0.05, we reject the null hypothesis (H_o) and conclude that there is a significant relationship between awareness of health risk associated with rice mills and prevalence of such health problems (see appendix). Therefore, women who work at rice mills are mostly ignorant of the cause of their health challenges.

DISCUSSION

This study was conducted with 365 women working at Abakaliki rice mill. From the sample, majority (43.5%) were aged 40-49 years. A significant number (35.5%) were between 30 and 39 years. None of the respondents belonged to the geriatric or child age group. Almost the same features were reported by earlier scholars in their

Table 4: Safety measure applied by women working at the rice mill (N=365)

Safety measures used	*Agreement*	*Disagreement*	*Decision*
Nose mask	34 (8.8%)	331 (91.2%)	-
Mouth mask	32 (8.8%)	333 (91.2%)	-
Ear plugs when working near machines	32 (8.8%)	333 (91.2%)	-
Hand gloves	32 (8.8%)	333 (91.2%)	-
Protective garments	30 (8.0%)	335 (92.0%)	-
Protective shoes/ boots	0 (0%)	365 (100%)	-
Protective eye glasses	0 (0%)	365 (100%)	-
Hairs covers	289 (79.2%)	76 (20.8%)	+
Constant drinking milk	119 (32.6%)	246 (67.4%)	-

Source: Field Survey 2018

studies. For instance, Rana et al. (2018) noted that majority of the rice mill workers were less than 40 years; Prakash et al. (2010) pointed out that majority of their respondents were between 25 and 35 years, while Musal et al. (2000) had earlier reported a mean age of 40.17 years among their subjects of research. Again, majority of the respondents (84.9%) had worked at the rice mill for < 10 years. This is similar to the result of Rana et al. (2018), which reported that majority of their respondents have worked less than 20 years at the rice mill. The implication is that even less than 10 years is enough time for the health problems of women working at the rice mills to manifest. Similarly, it is enough time for the workers to understand the health dangers involved in their job. This is an aspect that earlier studies could not capture.

The result shown on Table 2 indicates that, over 50 percent the entire population sampled suffered several health challenges. This is seen as the acceptance level of most of the factors leading to health risks are above 50 percent. This shows that women working at Abakaliki rice mill faces various health risks ranging from chronic cough, catarrh, waist pain, backache, skin irritation, tightness in chest and suffering of physical injury. This finding confirms the position of many scholars and researchers (Lim et al. 1984; Tripathi et al. 2015) who posited that dust inhalation is one of health hazards to the respiratory systems, skin, and eyes of workers. Dust exposure as a result of rice husk leads to inflammatory reactions in the pulmonary tissues and also sparks off asthmatic attacks. Rice mill workers also suffer from chronic cough, chest tightness, skin and nasal irritation. In other words, the study revealed that majority of the health problems (6) reportedly suffered by the women is related to respiratory morbidity. This supports the assertion by Ansari et al. (2017) that the major health complains of rice mill worker are symptoms of respiratory disorder. This could be attributed to unprotected exposure to dust among the women working at the rice mills. Again, the results are in agreement with the views of Fatima et al. (2016) when they posited that in rice mills, health and safety hazards are expected including psychological and social issues. All the health challenges that they raised where present in Abakaliki rice mill industry.

Other important morbidities reported include severe backache (90.7%), severe waist pain (90.1%) and rough skin or allergic skin diseases (90.2%). All these are in line with the study carried out by Prakash et al. (2010), in which a significant reduction in forced expiratory volume per second, forced vital capacity, peak expiratory flow and maximal voluntary ventilation was noticed in people who have worked for eight or more years in the industry. In the present study, the reported 6 chronic respiratory symptoms do not show a good working condition. Therefore, work-related health problems that develop as a result of doing a particular job are very common in work places. But fortunately, many of them are preventable or controllable with appropriate treatment. As such, assessing the risk of such occupational morbidity helps in identifying appropriate measures for prevention and management.

Similarly, the study revealed that there is a significant relationship between working at rice mills and health problems. This is the result of the test of hypothesis, which shows that χ^2 = 87.347, DF = 3 and P-value (0.000) is less than 0.05. Therefore, we reject the null hypothesis and conclude that women who work at rice mills are exposed to great health risks. This supports

the work of Oginyi et al. (2017), Eshwaramma et al. (2016), Prakash et al. (2010) and Chandrathilaka et al. (2018) who posited that workers exposure to dust, noisy sounds and lifting of heavy objects leads to severe ill-health among such workers at rice mills.

Result from this study has however revealed that in spite of all these health challenges faced by these women working at Abakaliki rice mill, they are not fully aware of the occupational health hazards they face at rice mills. This is indicated in Table 3, which shows that the acceptance level of each factor falls below 50 percent. Since they are ignorant of the occupational health hazard in Abakaliki rice mill, they tend to fall sick more often as they are exposed to health risks on a daily basis while working at the rice mill. Also with regards to respondents' level of education, the result on Table 1 indicates that, majority of the respondents (91.8%) have no formal education or just attended only primary/secondary schools, while only 8.2 percent attended tertiary institutions. This reveals why women working at Abakaliki rice mills are poorly aware of the various health problems they might encounter while doing their jobs. This is in line with the study of Sabitu et al. (2009) when they reported that educational attainment has significant influence on the awareness level of workers about the occupational risks that confront them. Therefore, women working at Abakaliki rice mill are affected by health problems while doing their jobs, but because of their low level of awareness, they may attribute the health challenges to others sources. This makes prevention and treatment of such health problems very difficult. Consequently, it is believed that if the level of awareness of occupational hazards is high, the workers will realize the need to utilize protective measures during work. And such health challenges could be prevented and/or managed appropriately. This low level of awareness is also a major reason why the rice mill workers do not complain about their working condition. The lack of complain may have also led to what Dawoodpoto (2018) pointed out earlier that the owners of the rice mills do not take any action to install required equipment to prevent infections in the industry. Since the women working at rice mills do not complain, the rice mill owners do not have any reason to feel perturbed. As a result, the trouble continues unchecked, with human life and productivity wasted.

The result of the test of hypothesis 2 also supports this position. It was found that there is a significant relationship between awareness of health risk associated with rice mills and prevalence of such health problems. Therefore, we reject the null hypothesis and conclude that women who work at rice mills are mostly ignorant of the cause of their health challenges. This is in line with the view of Nwosu (2011) when he pointed out that health belief model (HBM) suggests that the people's belief, attitude and awareness are crucial determinants of what they call disease and their health related action. Consequently, the action a person takes in the face of health challenges depends, to a great extent, on her knowledge about the actual source of the problem. When the source is unknown or misinterpreted, prevention and management of such health issues becomes a challenge. As a result, occupational safety and health leadership is about creating awareness and securing safety in order to reduce health risks arising out of work activities (Mullen and Kelloway 2011). In other words, awareness of these health hazards is a necessary measure towards securing the life of women working at the rice mills as well as sustaining high productivity.

The study also investigated the level of compliance in the use of protective devices. Analysis in Table 3 revealed the level of compliance in the use of safety measures. Our findings revealed that women working at the rice mills are not even aware of some of the protective devices and therefore hardly use these safety appliances to checkmate occupational hazards. This is in tandem with earlier studies (Rana et al. 2018; Oginyi et al. 2017; Batsungnoen and Kulworawanichpong 2011; Karanikas et al. 2018), which pointed out that non-use of protective devices was a significant predictor of respiratory morbidity. This clearly indicates that women working at the rice mill are exposed to a great deal of health risks. These findings also negates the view of Sultana and Afrad (2014) when they noted that it is increase in the age of women working at rice mills that brings low productivity. The present study has shown that the major element that causes low productivity is ill-health, which results from the health challenges that women working at the rice mills are exposed to. The matter is made worse because these women are not even aware of the source of their ill-health.

CONCLUSION

Occupational morbidity is very high among women working at Abakaliki rice mills. The major ones are respiratory diseases, backache, severe waist pain and rough skin. The duration of exposure, non-use of protective devices and low level of awareness were significant determinants of occupational health problems among Abakaliki women rice mill workers. In other words, as the level of lack of awareness increases, work-related health disorder increases, which can be explained through awareness-response relationship.

RECOMMENDATIONS

Awareness generation and sensitization among female rice mill workers, provision/promotion of the use of protective devices like goggles, respiratory mask, safety boots and gloves are necessary to ensure improved health for women working at rice mills. There should also be provision of regular medical checkup in line with the standard world occupational-health best practices to achieve excellent health for women working at rice mills. Rice mills should be properly ventilated and exhaust fans installed to expel air carrying fine particles of dust and rice bran. Provision of first aid materials is a necessity at rice mills.

There is also need for continuous research, inspection and monitoring of rice mill environment and work conditions because this is an important macro-measure. All these will go a long way to ensure safety and good health of women working at rice mills.

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APPENDIX

STATISTICAL CALCULATIONS

Hypothesis 1: There is no significant relationship between women working in rice mill and health hazard.

Chi-square Tests	*Value*	*df*	*Asymp.*
Sig. (2-sided)			
Pearson Chi-square	87.347[a]	3	.000
Likelihood Ratio	111.658	3	.000
Linear-by-Linear Association	28.979	1	.000
N of Valid Cases	365		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is .83.

Hypothesis 2: There is no significant relationship between knowledge of health hazard at rice mill and the prevalence of health hazards.

Chi-square Tests	*Value*	*df*	*Asymp.*
Sig. (2-sided)			
Pearson Chi-square	375.136[a]	16	.000
Likelihood Ratio	240.916	16	.000
Linear-by-Linear Association	2.409	1	.121
N of Valid Cases	365		

a. 17 cells (68.0%) have expected count less than 5. The minimum expected count is .01.