Prevalence of Work-Related Injuries and its Impacts Among Rice Mill Workers, in Jigawa State, Nigeria

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DOI: 10.56201/ijhpr.v8.no2.2023.pg44.57

Abstract
The purpose of the study was investigating "Prevalence and determinants of work related injuries among rice mill workers, in jigawa state". Cross sectional study design was used. Stratified sampling method was used to choose 417 Rice Mill Workers in Jigawa State. A questionnaire was used to collect data. The instrument was subjected to a reliability tests and a reliability index of 0.85 was obtained. Data was analyzed using SPSS version 22. Percentage, Mean and standard deviation was used to answer the research questions. A total of 417 rice mill workers in Jigawa State participated in the study, 90% of the respondents were males while 10% were females. The study further revealed that there was a high prevalence of work related injuries. Machine operators, wheel barrow pushers and casual workers were the categories of workers often affected by work related injuries. The major injuries are back injury, severe waist pain, skin laceration and burns. While the most safety measures relatively available for them were caps, hand gloves, face masks and boot. This study has also found that; duration of exposure, non-use of protective devices and low level of knowledge were significant determinants of occupational health problems among these workers. The study concludes that Occupational morbidity is very high among rice mill workers in Jigawa. Thus it is recommended that there should be regular sensitization of rice mill workers on occupational health hazards and the use of safety measures.

Key Words: *Prevalence, Rice Mill, Work-related injuries*

Introduction

Occupational health is an integral appendage of industrial and organizational psychology, which deals with human health in relation to work and the working environment. It aims at the promotion and maintenance of the maximum degree of physical, mental and social well-being of workers in all occupation, the prevention among workers departures from health caused by there working conditions, the protection of the workers in their employment from risks resulting from factors adverse to health, the placing and maintenance of the worker in an occupational environment, adapted to his physiological and psychological ability and to summarise the adaptation of "work to man" and "Man to work" (Babel &Rajvanshi, 2013). Eyayo (2014) defined occupational health as a means of protecting and maintaining the physical, psychological promoting health, safety and welfare of the workers and their family.

ILO summarized occupational health definition as the prevention of departure from health among workers caused by their working conditions; the promotion of workers in their employment from risks resulting from factors adverse to health, the placing and maintenance of the worker in occupational environment adapted to their physical and psychological well-being; and the adaptation of work to man and man to his work. Aliyu and Saidu, (2011) describe occupational health as the health investment for workers to help them spend their working lives in a healthy way both mentally and physically and enable them enjoy better health in later life as well. It is the sum total of all the activities and programmes that are aimed at preventing, protecting and maintaining the highest level of health and safety among workers in any work environment which can be industrial, non-industrial or private or organizational. While at work, individuals face a diversity of hazards almost as various as the different types of work, including chemicals, biological agents and adverse ergonomic conditions etc.

Globally, there are 2.9 billion workers who are unprotected to hazardous risks at their work places (Zaff& Frees, 2018). Annually there are two million deaths that are attributable to occupational health hazard while 4% of Gross Domestic Product (GDP) is lost due to occupational diseases and injuries. WHO's programme on workers' health is concerned with the control of occupational health risks, the protection and promotion of the working populations and the humanization of work.

The joint international labour organisation committee on occupational health, 1950, defined occupational health as the highest degree of physical, mental and social well- being of workers in all occupation. A hazard is a source of danger that has the ability to cause injury or harm (Asogwa, 2017). Occupational hazards are dangers to human health and well-being which are associated with specific occupations. While efforts are made to reduce hazards, these hazards remain present in the workplace by nature of the profession (Karasek, 2016).

Occupational or workplace hazard is danger to health, limb, or life that is inherent in, or is associated with, a particular occupation, industry, or work environment. It includes risk of accident and of contracting occupational diseases (Natarajaseenivasan et al., 2017). Occupational hazards can be divided into two categories: Safety and health hazards. Safety hazards that cause accidents that physically injure workers and Health Hazards which result in the development of disease. It is important to note that a hazard only represents a potential to cause harm.

Whether it actually does cause harm will depend on circumstances, such as the toxicity of the health hazard, exposure amount and duration. Hazard can also be rated according to the severity of the harm they cause – a significant hazard being one with the potential to cause a critical injury or death. Occupational hazards may lead to illness, injury or death. They can

include physical risk like falls and exposures to heavy machinery, along with psychological ones such as stress. Occupational hazards like exposure to chemical, biological and radiological agents are also concerned among people who work in jobs with recognised occupational safety hazards, special training is often provided so that the people are made aware of the hazards (Asogwa, 2017).

Occupational health includes studies on all factors relating to work, working methods, condition of work and the working environment that may cause adverse health hazards or diseases of workers (Natarajaseenivasan et al., 2017). The small and medium scale industries workers if not using safety measures are much prone to occupational hazards which may lead to illness, injury, or death. They can include physical risks like falls and exposures to heavy machinery, along with psychological ones such as stress. Occupational hazards like exposure to chemical, biological and radiological agents are also of concern. These occupational health hazards are also responsible for the most incidents of disability claims, whether temporary, long-term, or permanent.

Small and medium scale industry is a desirable means of livelihood occupation not only in Nigerian setting but globally. As applicable to other areas of human endeavour, the workers are vulnerable to various occupational health hazards, some of which give rise to both mental and physical injuries. While other cases, if care is not properly taken, it may lead to life threatening disorders (Babel &Rajvanshi, 2013).

According to the International Labour Organisation [ILO] (2021), an estimated 2.78 million lives are lost per year due to occupational and work-related illnesses. It has also been reported that, there are about 374 million non-fatal work-related injuries every year, and the significant loss of productive manpower hours due to workplace hazards were estimated at 3.94 percent of the gross Domestic Product each year Azees, et al., 2022). According to World Health Organization (WHO), workers' health can be affected by individual, enterprise and social factors (ILO,2021). At the small and medium scale industries, 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 and all of these are at risk of developing a varying health related problems attributable to their jobs. The employees are also vulnerable to Eye injuries, respiratory tract infections, and physical injuries like bruises, wounds and amputations (Zaff, et al. 2018).

Small and medium scale industries 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 small and medium scale industries, who are exposed to such environment, may have hematological parameters infected.

Work related injury is any physical injury or condition sustained on a worker in connection with the performance of his or her work in the industry. Employees in industries spend at least one third of a day at work which have a strong effect on their health and safety (Zaff, et al., 2018). The extent of human engagement in various occupations has led to a significant rise in varying degrees of injuries and fatalities across both developed and developing countries, which were attributable to increasing level of industrialization among middle -and-low income countries, a development that has intensified exposure to hazardous chemicals, with resultant increased risks to occupational injuries and varying health impairment among

workers (Asogwa, 2017). According to a report commissioned by the international labour organization (ILO), it was estimated that about 2.78 million deaths, 313 million non-fatal accidents and 160 million work-related diseases occur in the workplace globally (Takala et al. 2017).

Azeez et al. (2022), conducted a study on the crucial role age and number of hours' employees worked per day play in the development of respiratory abnormality. It was noted that, age is one of the social determinants of health and has always been a major risk factor in several disease conditions. Therefore, it is not surprising that small and medium scale industries workers aged 30 years or more were three times more likely to have lung function abnormalities. A similar finding was reported in a previous study among workers exposed to reed dust. Also, working beyond eight hours a day increases the risk of having lung function abnormality more than two folds.

ILO. (2021) investigated on the prevalence of musculoskeletal disorder among small and medium scale industries workers in Karimnagar and the findings indicated that, Load handling, lifting, and carrying were the major job components resulting to work related injuries. In Bangledash, an analysis of data from the National Health Interview Survey (NHIS) estimated that in a given 1-year period, there were about 22.4 million cases of back pain that last a week or more (prevalence: 17.6%), and about 149 million lost workdays due to machine related mechanical and non-mechanical hazards of varying severity ranging from; amputations, fractures, lacerations, or crushing injuries to minor injuries such as bruises, abrasions, sprains or strains, burns, or cuts (Takala, et al., 2017).

Statement of the Problem

Small and medium scale industries such as rice milling companies/industries are certainly one of the most rapidly growing sector of industrialization in Nigeria, particularly in northern region of the country following federal government's decision to ban importation of rice, tomatoes, and frozen foods amongst others. This has turned to be a blessing to the region and the country at large, as it has necessitated many to begin rice milling activities in their quest to optimize local production to meet the demand for public consumption by filling the vacuum created by federal government's ban on rice importation. The sophisticated machines used in the rice milling industries have made it risky for workers. However, such risky nature of the work environment has been said to be averted by strict compliance with occupational health safety guidelines.

Unfortunately, in Jigawa State, it has been observed that employees in the rice milling companies/industries are not being adequately trained before they are engaged to work in the industries or rather subjected to any on the job training regarding their safety. Moreover, it was further noted that, there exist no any health facility in any of the rice milling industries across the state to cater for the health needs of the employees or subject them to periodic medical scrutiny to validate their health status. As such, majority of them might have been suffering from various forms of work related injuries attributed to the milling activities in silence.

Despite all the available data concerning work related morbidity and mortality from the research done at international and local levels, there is dearth of data pertaining to work related injuries among rice mill workers in Jigawa state. Hence, this serves as the motive behind the researchers' quest to investigate on the prevalence and determinants of work-related injuries among rice mill workers in Jigawa State.

Purpose of the Study

The purpose of the study is to investigate the prevalence of work-related injuries among rice mill workers in Jigawa State. Specifically, the study sort to:

1. determine the prevalence of work-related injuries among rice mill workers in Jigawa State.
2. assess the level of knowledge of work place safety among rice mill workers in Jigawa State.
3. Find out the impact of work-related injuries faced by various rice mill workers in Jigawa State.

Research Questions

The research answered the following research questions:

1. What is the prevalence of work-related injuries among rice mill workers in Jigawa State?
2. What is the level of knowledge of work place safety among rice mill workers in Jigawa State?
3. What is the impact of work-related injuries faced by various rice mill workers in Jigawa State?

Significance of the Study

The finding of this study will contribute to the development of preventive polices, effective intervention priorities, and any cost-benefit analysis on occupational health and safety legislation and occupational health services.

There has never been a research conducted regarding the prevalence and determinants of work-related injuries among rice mill workers in Jigawa State. Similarly, there exist no evidence of any similar research conducted regarding work-related injuries among workers of small and medium industries, such as bakeries, furniture, brick-layers, welders and mechanics in Jigawa State. Consequently, when this research is concluded, its findings would be of immense benefit to the workers engaged in rice mill industries, Jigawa state government and the community at large.

Methods

A descriptive cross-sectional design was adopted to determine the prevalence and determinants of work-related injuries among rice mill workers in Jigawa State. The study was conducted in Jigawa State, which is one of the seven (7) states that constitute the north-western region of Nigeria. The state was created on Tuesday August 27, 1991, during the regime of the then military administrator, General Ibrahim BadamasiBabangida, when the Federal Military Government announced the creation of nine additional states in the country which brings the total number of states to thirty as at then. The announcement was given a legal backing through the; State Creation and Transitional Provisions Decree No. 37 of 1991. Jigawa State was part of Kano state until its creation as a state on the 27th day of August, 1991. It borders with Kano, Katsina, Bauchi and Yobe States, as well as Niger Republic. It has three (3) senatorial zones namely; South-West, North-West and North-East zones.

South-West zone has seven (7) local governments namely; Birnin Kudu, Buji, Dutse, Gwaram, Jahun, Kiyawa and Miga local governments.North-West zone has twelve (12) local governments namely; Babura, Garki, Gagarawa, Gumel, Gwiwa, Kazaure, Maigatari, Ringim, Roni, Sule-tankarkar, Taura and Yankwashi local governments. While, the North-East zone has eight (8) local governments namely; Auyo, Birniwa, Guri, Hadejia, Kaugama, Kirika-Samma, Kafin-Hausa and Mallam-Madori local governments.

Jigawa State has total number of twenty-seven (27) local governments, eleven (11) federal constituencies and thirty (30) state constituencies. Where; Babura, Gwaram and Kafin-Hausa local governments each has two (2) state assembly constituencies whereas, the remaining twenty-four (24) local governments each has single state assembly constituency thereby making it to the total sum of thirty (30) constituencies.The ethnic composition of the state is mainly formed by the Hausa and Fulani, as well as other minor ethnic groups.

The study population was all (880) categories of employees working in rice mill companies/industries in Jigawa State. Only rice mill workers in Jigawa State who agreed and consented to participate in the study met the inclusion criteria and were therefore included. All employees of small and medium industries other than rice mill companies as well as employees of rice mill companies in jigawa state who did not agree/refused consent to participate in this study failed to meet the inclusion criteria and were therefore excluded from participation in this study.

The sample size is 417 elements or participants for a study. The need to calculate sample size before embarking on any clinical research work is to avoid including too large or too few study participants. Because when too few participants are included in a study, the sample will not be a true representation of the target population and as a result, the findings/results obtained cannot be generalized to the population. Conversely, when more than the required number of participants are involved/included in a study, more resources will be wasted (money, material and time). Furthermore, involving large number of study subjects unjustifiably may put more individuals at risk of the intervention in case of experimental studies.

As such, calculating sample size is therefore essential in determining the optimum number of participants to form part of a study so as to guarantee the researcher with ability to arrive at ethically and scientifically valid results.

The sample size of 417 was selected from the total population of 880 employees across the three (3) major rice mill companies one located in each of the three (3) senatorial zones, using simple proportion formula for sample size determination as below:

$$n = \frac{z^2 p q}{d^2}$$

Where, n =the desired sample size.

z = the standard normal deviate, usually set at 1.96 which corresponds to 95% confidence level.

p = the estimated percentage or prevalence of the attribute that is present in the population i.e. the attribute of interest.

q = 1 - p

d = degree of accuracy desired, usually set at 0.05.

Therefore,

$$n = \frac{z^2 * p * q}{d^2}$$

$$= \frac{1.96^2 * 50 (1 -50)}{0.05^2}$$

$$= \frac{3.8416 * 50 * 49}{0.0025}$$

$$= \frac{941192}{0.0025}$$

= 376.4

= 376 + 10% non-response rate.

= 417

A stratified sampling technique wasused to sample the study participants.Stratified sampling is a form of probability sampling method that involves researchers dividing subjects into subgroups called strata based on characteristics that they share.In this type of probability sampling (stratified random sampling), or stratification, the stratum is formed based on individuals' shared attributes or characteristics (homogeneity).Stratified random sampling allows researchers to obtain a sample population that best represents the entire population

being studied.

This type of probability sampling (Stratified sampling) method is done by dividing the entire population into different homogeneous groups called strata.This type of sampling method is often used when one or more of the strata in the population have a low incidence relative to the other strata.The following three (3) strata were formed: First Stratum: Administrative staff including clerks. Second stratum: Machine Operators. Third stratum: Labourers including wheelbarrow pushers and casual workers.

A researcher developed questionnaire was used to collect data from the respondents. At the point of entry into the study sites, the respective heads of the organizations werecontacted for a meeting and briefing, the researcher introduced and discussed with them, the aim/ objectives as well as the significance of the research so as to help in mobilizing the workers to the point of data collection. Four research assistants supported the researcher in the process of data collection from the respondents. The assistants were colleagues from the Jigawa State college of Nursing Sciences, two (2) from college of Nursing Birnin kudu campus and the two (2) others were from college of nursing Hadejia campus. The assistants were adequately guided and enlightened about the research study including; description and orientation of the study, aim and objectives of the study, ethical issues pertaining to the study, data collection procedures and protocols to ensure accurate, complete and reliable data and a preview of the study tool to ensure consistency in asking questions and elicited responses.

Forty-two questionnaire (10%) of the calculated sample size was administered as pre-test at a small scale rice mill company in Hadejia LGA so as to enable the researcher assess for clarity, feasibility and simplicity of the tool. Subsequently, necessary/appropriate adjustments to the tool were effected as required. On the day of data collection, respondents were briefed about the research, verbal consent weresought, and data werecollected until the required sample size wasreached. Confidentiality, anonymity and voluntary participations of the participants wereguaranteed to the respondents.

Validity of an instrument simply refers to as the extent to which an instrument measures what it is meant to measure.The instrument for data collection was submitted to the three (3) experts for scrutiny so as to ascertain the feasibility of the instrument in terms of content and face validity. Face validity entails validating the ability of an instrument or tool to measure what it should measure at face value i.e by mere looking at the instrument (visual scrutiny of an instrument to validate it) to check the instrument to ensure that its contents have covered all necessary items needed to address all the research objectives.Thereafter, all the corrections noted and observations made were incorporated and effected and the final version of the instrument was developed. Reliability determines the consistency of an instrument or tool to measure something that it is meant to measure. It entails the ability of an instrument to produce same result when administered to same individuals and under the same condition.The test-retest reliability method was employed to determine the reliability of the instruments.

Test –retest reliability is a form of reliability test that measures the consistency of results when same test is repeated on the same sample at a different interval.

To ensure the consistency of the instrument. The researcher distributed 22 copies of the instrument to a set of midwives who were not part of the study population, after ten (10) working days, the researcher redistributed the same instruments to the same sets of nurse-midwives. The two different responses were gathered and analysed using Pearson's Product Moment correlation and a reliability index of 0.83 was obtained denoting that the instrument was reliable.

Data collected wasentered into the Statistical Package for the Social Sciences (SPSS) software and analysed using same software. Analysis wasdone in line with the specific

objectives and for the tests of significance (p-value) of ≤ 0.05. Measures of central tendencies, dispersion and associations were used to analyse the data. While the results were presented quantitatively using frequency tables, percentages and charts.

An ethical request was sent to the research ethics committee of the University of Port Harcourt for scrutiny and subsequent approval, after which an introduction letter was given to the researcher. The introduction letter was then taken to the research sites together with a written application requesting for permission to conduct research/collect data in the research area; rice mill companies in Jigawa State. Adequate information was given to the respondents in a simple, clear and understandable manner including their right to opt- out of the study at any point in time without any consequence whenever they desire to do so. Thereafter, their individual consent wasobtained for them to voluntarily and freely participate in the study. Respondents' confidentiality and anonymity was guaranteed by the researcher before they agree to participate.

Results and Discussion

This study dealt with the presentation of data analyzed based on the research questions.

A total of 420 copies of the questionnaire were distributed to the study participants. Four hundred and seventeen (417) copies were received. After checking, sorting and collation, 420 were valid and suitable for data analysis and interpretation. Out of the 420 copies distributed, 3 copies were not returned and none were void/incompletely filled.

Result for Data Analysis

Table 1: Percentage and frequency of demographic data

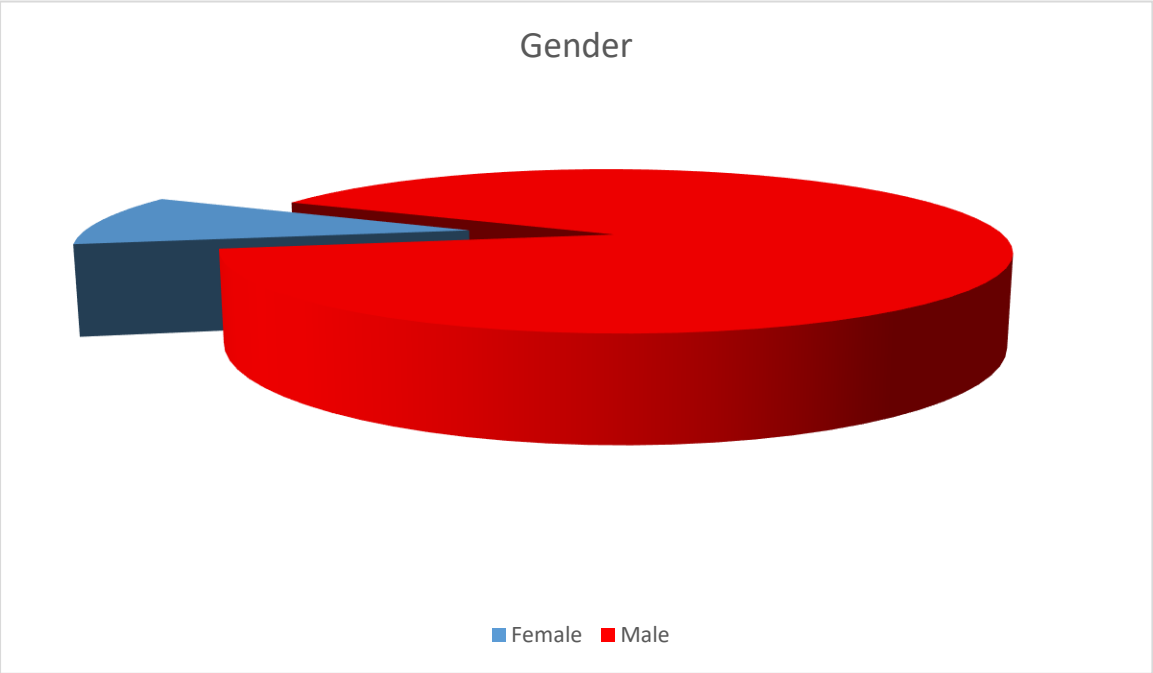

Fig. 1: Gender of respondents

Fig. 1, show that 10% of the respondents were females while 90% were males.

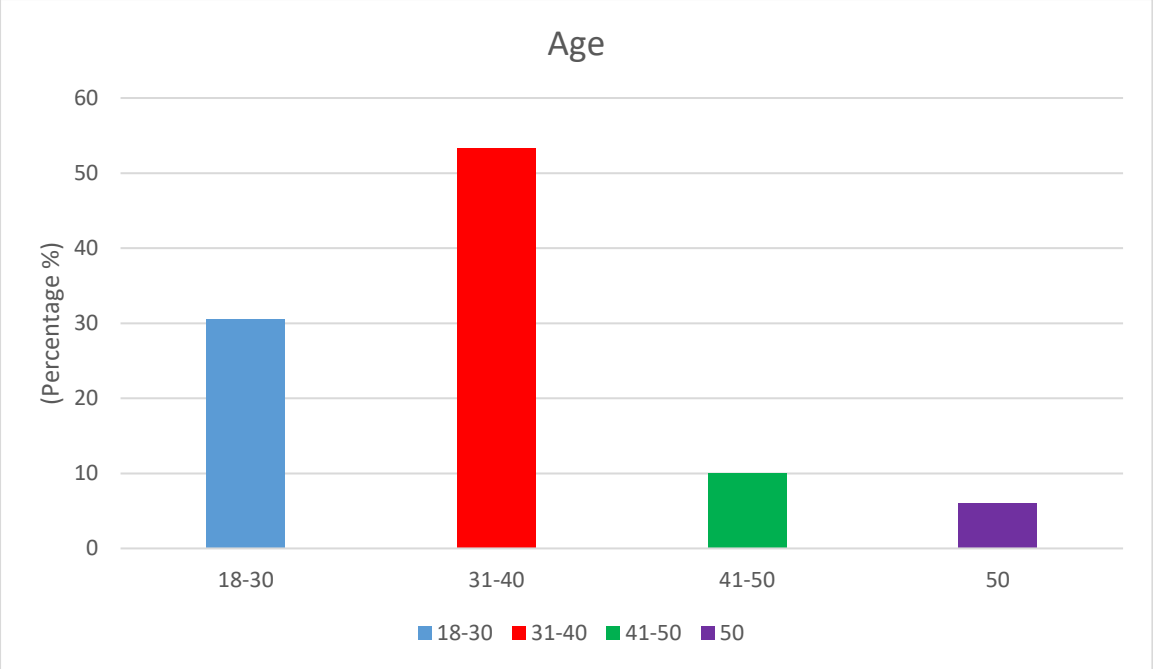

Fig. 2: Age of respondents

Fig. 2, show that 30.5% of the respondents were between 18 – 30years, 53.4% were between 31 – 40years, 10% were between 41 – 50years while 6.1% were between 50years and above.

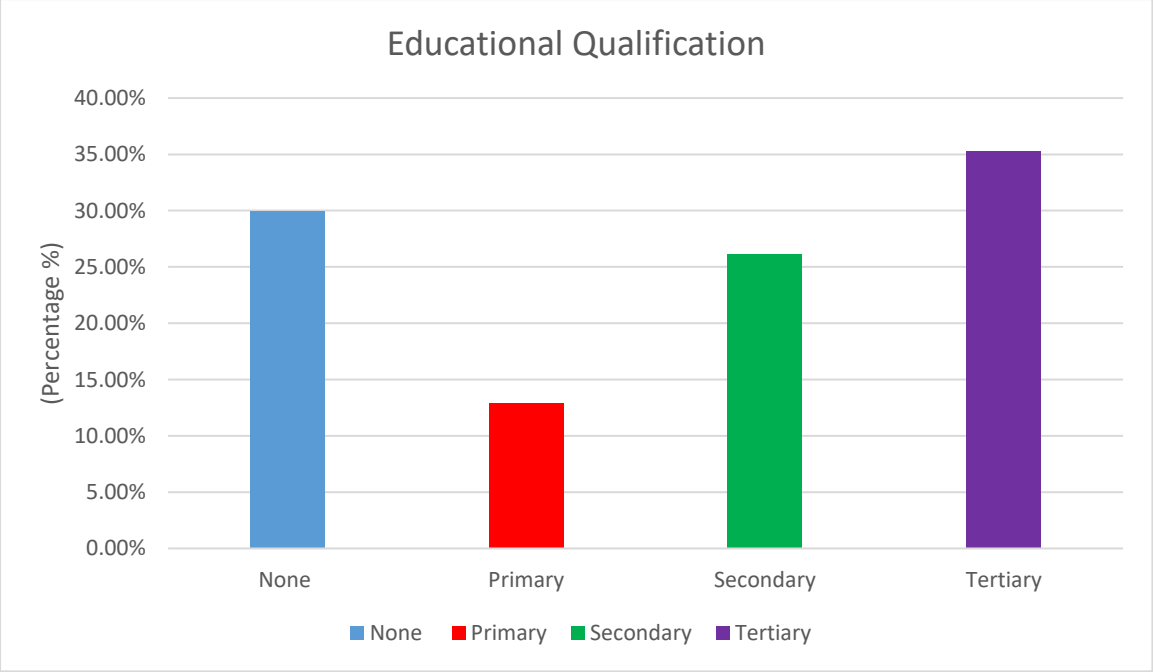

Fig. .3: Educational Qualifications of the respondents

Fig. 3,shows that 29.98% had no formal education, 12.95% had primary school education, 26.14% had secondary school education while 35.25% had tertiary education.

Research Question 1: What is the prevalence of work-related injuries among rice mill workers in Jigawa State?

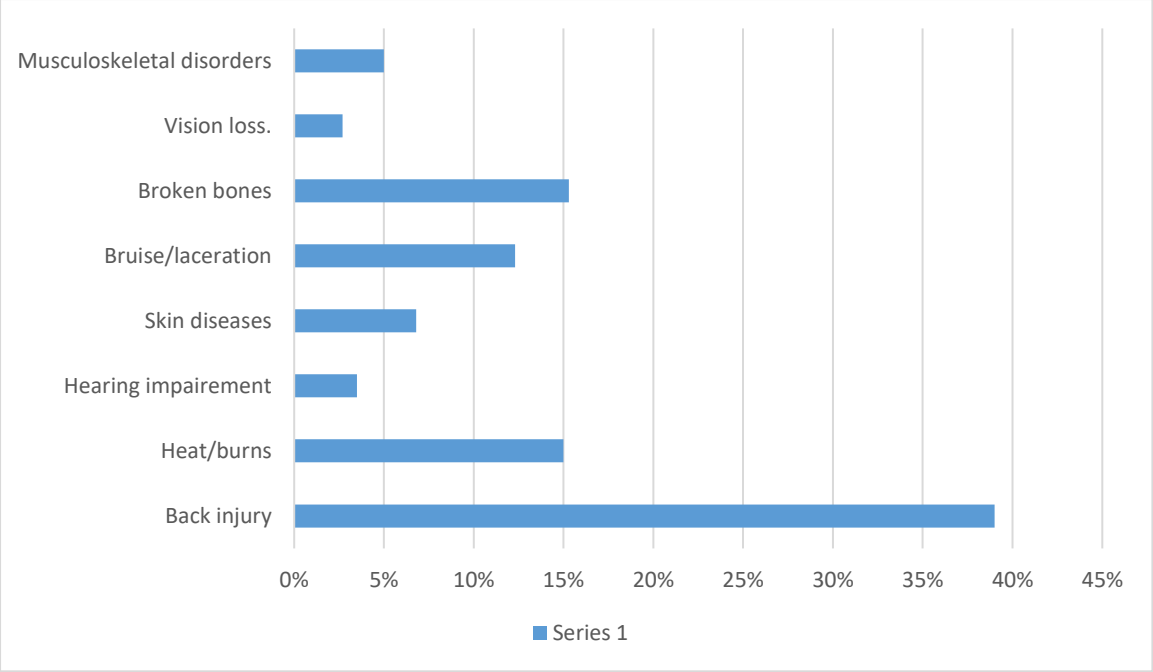

Fig. 4: Prevalence of work-related injuries among rice mill in Jigawa State.
Fig. 4 revealed that 5% of the respondents suffered musculoskeletal disorder, 3% suffered vision loss, 15% suffered broken bone, 12% suffered bruises and laceration, 7% suffered skin disease, 4% suffered hearing impairment, and 15% suffered heat / burning while 39% suffered back injury.

Research Question 2: What is the level of knowledge of work place safety among rice mill workers in Jigawa State?

Table 2: level of knowledge of work place safety among rice mill workers in Jigawa State.

S/N	Statement	Min.	Max.	Mean	SD
1	I know all my rights and responsibilities in relation to work place health and safety.	**1**	4	2.07	.75
2	I am clear about my employers' rights and responsibilities in relation to workplace health and safety.	1	4	2.61	.65
3	I know how to perform my job in a safe manner.	1	4	2.18	.70
4	If I observe any health or safety hazard at my workplace, I know who (at my workplace) I would report to.	1	4	3.3	.11
5	I have the knowledge to assist in responding to any health and safety concerns at my workplace.	1	4	2.42	.13
6	I know what necessary precautions are that I should take while doing my job.	1	4	2.96	.58
7	Using face mask at work prevents the risk of inhaling rice dusts and other respiratory irritants.	1	4	3.61	.011

8	If my work environment is unsafe I would not say anything, and hope that the situation eventually improves.	1	4	2.20	.10
9	I know fully well that prolonged working hours increase the risk of work place hazards.	1	4	2.31	.15
22	Working the whole shift without break is a sign of physical strength and so, does not constitute any risk.	1	4	2.17	.49
23	I know how to check all safety equipment's and work tools and make sure they are in a safe condition before use.	1	4	2.05	.47
	Average Mean			**2.47**	**.21**

Table 2 revealed a mean value ranging from 2.20 to 3.3 with an average mean value of 2.47. The mean value is greater than 2.5 criterion mean which showed that level of knowledge of work place safety among rice mill workers in Jigawa State is low.

Discussion of Findings

Prevalence of Work-related injuries among rice mill workers

Result obtained from the research indicates that backache, headache, cough, catarrh, skin rashes, eye injuries, wounds were the most prevalent occupational health hazards among small and medium scale industries workers. This finding is in consonance with previous studies (Aliyu&Saidu, 2016; Takala, et al., 2017) which reported that backache, headache, cough, catarrh, skin rashes, eye injuries, tuberculosis, asthma are the commonest occupational health hazards among small and medium scale industries workers. Backache occurring among small and medium scale industries workers could be as a result of performing task that require repetitive motion and carrying of rice bag**.** The findings are also in consonantwith findings from Brazil (Zaff, et al., 2018).India (Kumar et al., 2018), and North Gondar, Ethiopia (Zewdie et al., 2015) who said that most of the occupational injuries sustained were on the upper and lower limbs. Involvement of upper and lower limbs may be due to more involvement of these particular body parts and exposure to unguarded machines and tools. Human failures such as improper working style, conscious risk-taking, and lack of complying with safety rules may also result in such injuries. Further about 62.6 % of workers were found to be not using PPE which may be another reason for such injuries.

Level of knowledge of work place safety

The findings revealed that in spite of all these health challenges faced by these workers working at rice mill companies/industries in Jigawa State, they are not fully aware of the occupational health hazards they face at small and medium scale industries. Also with regards to respondents' level of education, the result on Fig.3 indicates that, majority of the respondents (21.8%) had no formal education or just attended only primary/secondary schools, while only 35 percent attended tertiary institutions. This reveals why the workers at Jigawa State rice mill companies/industries are poorly aware of the various health problems they might encounter while doing their jobs. This is in line with the study of Aliyu, et al., (2011) when they reported that educational attainment has significant influence on the knowledge level of workers about the occupational risks that confront them. Therefore, people working in Jigawa State rice mill companies and industries are affected by health problems while doing their jobs, but because of their low level of knowledge/awareness, they

may attribute these health challenges to other sources. This makes prevention and treatment of such health problems very difficult. Consequently, it is believed that if the level of knowledge of occupational hazards is high, the workers will realize the need to utilize protective measures during work.

Summary

Injuries are a public health concern accounting for 2.78 million fatalities globally. Rice Mill workers, Welders and several other Small and medium scale industry Workers are exposed to a broad range of injuries (e.g. cuts, burns, eye injuries, skin irritations, and musculoskeletal disorders) and yet, there is paucity of information on the context of specific determinants to execute injury prevention and control strategies. The study was aimed at investigating Prevalence of work related injuries among rice mill workers in Jigawa State. Cross sectional study design was used. Stratified sampling method was used to choose 417 rice mill workers which form part of the small and medium scale industries in Jigawa State. A questionnaire was used to collect data. The instrument was subjected to a reliability tests and a reliability index of 0.85 was obtained. Data was analyzed using SPSS version 22. Percentage, Mean and standard deviation was used to answer the research questions. The findings of the study revealed that;

1. There was a high prevalence of work related injuries among rice mill workers in Jigawa State.
2. The major injuries sustained/experienced by these employees are backache, severe waist pain and rough skin, cuts, laceration, burns, hearing impairments and respiratory disorders.
3. The most safety measures relatively available for use by the rice mill workers in Jigawa State Rice Mill industries were caps, hand gloves, face masks and boot
4. Duration and length of exposure, non-use of protective devices and low level of knowledge were significant determinants of occupational health problems among the rice mill workers in Jigawa State.

Conclusion

Occupational morbidity is very high among people working at Jigawa State Rice mill companies which is part of the small and medium scale industries in the state. The major ones are backache, severe waist pain and rough skin, burns, cuts and respiratory problems. While the most safety measures relatively available for them were caps, hand gloves, face masks and boot, majority of the rice mill workers like other workers in small and medium scale industries workers in the Jigawa State small and medium scale industries were in the bad habit of not practicing the available safety/precautionary measures. The duration of exposure, non-use of protective devices and low level of knowledge were significant determinants of occupational health problems among the rice mill workers. In other words, as the level of lack of knowledge increases, work-related health disorders increase, which can be explained through knowledge-response relationship.

Recommendations

Based on the analysis of the data gathered and the findings and results of the study gotten, following recommendations were drawn in the researchers' quest to ameliorate the observed challenges and to improve the general outlook of the whole situation:

1. Government and small and medium scale industries e.g rice mill company owners should ensure adequate environmental control measures in their respective industries.
2. Rice Mill Company and other small and medium scale industry owners should promote optimal use of personal protective equipment amongst their employees.
3. There should be regular sensitization of rice mill workers and other small and medium scale industries workers on occupational health hazards and the use of safety

measures at work place.

4. The management of rice mill companies and other small and medium scale industries should provide free periodic medical examination for all workers in their industry.

Contribution to Knowledge

Most Workers Engaged in Small and Medium Scale Industries though aware of the occupational health hazards associated with their work, they were not necessarily aware of the occupational illnesses and injuries that are linked with these hazards. As a result of this research, some the workers were made to be aware of these sicknesses and injuries which will guide them towards being compliant with the occupational health and safety practices.

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