Occupational Hazards and Safety Practices Among Brewery Workers in Rivers State, Nigeria

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Abstract

The study focused on the occupational hazards and safety practices among brewery workers in Rivers State. Six specific objectives, research questions and 6 hypotheses were raised and tested at a 0.05 level of significance. The research design adopted for the study was a descriptive survey design using triangulation mixed method. The population of the study was one thousand six hundred (1,600) workers in brewery industry in Rivers state. The sample size for the study was 671 workers and 8 participants for the qualitative study; the sample size was determined using fishers formula for calculating sample size. The instrument for data collection was a structured questionnaire and unstructured interview guide for the qualitative study; a reliability coefficient of 0.84 was obtained. The result showed that workers exposure to physical, biological, ergonomic, mechanical, chemical and psychosocial hazards were low, findings revealed that the grand mean of 2.65 ± 0.34 indicated a high extent of safety practices among brewery workers. The result illustrated a correlation coefficient, r = -0.05 indicating a very low relationship between hazards exposure and safety practices. It was recommended among others that Management of brewery companies should immediately institute and implement safety measures to avoid occupational risks and put in place adequate preparedness against other hazards, Management of brewery companies should always organize workshop aiming at promoting occupational safety and health through appropriate prevention programs and provision of comprehensive occupational health and safety services with the provisions of personal protective devices, and focused interventions for workers.

Keywords: *Occupation, Hazards, Safety Brewery, Workers, Practices*

Introduction

Brewery industries make significant contributions to the socio-economic development of most countries and improve its economy through production of alcoholic and non-alcoholic beverage drinks and massive employment of skilled and unskilled workers in these industries, but the work enshrined in the process is not without hazards. Globally, about 2.9 billion people are at risk at work, according to the World Health Organization (WHO, 2014). Diseases and conditions from these risks included hearing loss (16%), COPD (13%), asthma (11%), accidents (8%), lung cancer (9%), and leukaemia (2%). The International Labour Organization (ILO) released a study in 2019 that said accidents and sickness at work cost the world's GDP about 4% every year. An injury or accident at work costs the world a lot of money every year. A lot of people around the world thought that business was the most risky field.

Brents et. al. (2021) opined that unfortunately, there isn't enough safety measures in place in Nigeria's industry sector, which has affected GDP and jobs. Employers, workers, customers, businesses, and society as a whole all lose money when accidents happen at work. There are two types of losses that can happen at work: losses of material things and losses of lives. A lot of financial projections have been made on how much accidents at work cost, but some costs are still hard to find out (Adebiyi et al., 2011). A study by Elechi et al. (2020) discovered that brewery workers in Rivers State face health risks. Physical hazards (52.1%), biological hazards (52.1%), chemical hazards (42.6%), and psychological hazards (52.8%).

There are risks at work for most people who work in production, as a result of working in a dangerous environment, there are risks at work that include accidents, defects, job diseases, and stress (Awodele et al., 2014). WHO (2015) identifies five types of hazards that may exist in the brewery industry: chemical hazards, biological hazards, physical hazards, psychological hazards, and mental hazards. All of these can affect work processes and make workers less efficient in carrying out their jobs. Occupational Safety and Health Administration (OSHA) in 2016 found many risks in Brewery Companies. There were issues with the company's processes which included working in a small area, poor maintenance of machines, saving oxygen in the wrong way, and not guarding machineries properly. If something happens at work that makes it more likely for workers to have different kinds of problems, this study defines a job danger as such. These problems can last for a short period or a long period, based on the workers and the workplace.

As part of their job, people who work in the beer business may face risks that could lower the company's output. Most staff would say that their companies do a good job of lowering risks compared to contract workers. Solomon (2017) illustrated that brewery industries has the most occurring accidents among production industries. As much as there are different things that can go wrong at work, 88% of the time, it is because of unsafe situations and acts. Some researchers opine that brewers have a lot of dangerous things going on in the workplace, like loud noises, high temperatures, broken bottles, chemicals, exposure to radiation, cuts and scrapes on the face, damage to the eyes, breathing problems (like asthma and coughing), hearing loss, skin diseases, and joint disorders could all happen at work.

According to Mbomgaba (2015), 47.7% of workers are regular staff and 43.2% are temporary staff. Workers who work full-time may get free medical care, access to safety gear, and good pay from their jobs.

Onuohra et. al., (2020) reported that Physical, chemical, and ergonomic hazards are the most reported hazards that brewery workers are faced with. Many times, crashes, cuts, electric shocks, musculoskeletal disorders, repetitive movement affect people who work in breweries. Moving crate of bottles, heavy manual lifting, loading and offloading drinks, and taking these goods to wholesalers are some of the things that put brewery workers at risk. Brewing is done in several ways, and each one is overseen by a different group. To keep up with the demand for their products, beer companies hire more temporary workers regularly. Employees hired temporary do not get enough health and safety training, and workers are often go about their duties without proper supervision. Yet, the brewery industries have not been given adequate attention among scholars, in terms of educational diagnosis made to highlight their safety practices as well as hazards occurrence, which is necessary to provide a pointer for any intervention aimed at alleviating the hazards in the brewery industry.

RESEARCH QUESTIONS

The study provided answers to the following research questions:

1. What is the level of exposure to physical hazards among brewery workers in Rivers State?
2. What is the level of exposure to chemical hazards among brewery workers in Rivers State?
3. To what extent are brewery workers exposed to biological hazards in Rivers State?
4. To what extent are brewery workers exposed to ergonomic hazards in Rivers State?
5. To what extent are brewery workers exposed to psychosocial hazards in Rivers State?
6. What is the level of exposure to mechanical hazards among brewery workers in Rivers State?

HYPOTHESIS

The study was guided by the following null hypotheses which were tested at 0.5 alpha level:

1. There is no significant relationship between physical hazards and safety practices in brewery industry in Rivers State.
2. There is no significant relationship between chemical hazards and safety practices in brewery industry in Rivers State.
3. There is no significant relationship between biological hazards and safety practices in brewery industry in Rivers State.
4. There is no significant relationship between psychosocial hazards and safety practices in brewery industry in Rivers State.
5. There is no significant relationship between ergonomic hazards and safety practices in brewery industry in Rivers State.
6. There is no significant relationship between mechanical hazards and safety practices in brewery industry in Rivers State.

METHODOLOGY

The research design adopted for the study was a descriptive survey design using triangulation mixed method. According to Wisdom et al. (2013), mixed method of research design refers to the systematic integration of quantitative and qualitative data within a single investigation for better utilization of data. Triangulation design is a type of mixed method in which the researcher collects and analyzes quantitative and qualitative data separately on the same phenomenon and then the different results are converged.

The population of the study comprised of 1600 brewery workers in International Brewery Rivers state. The sample size of the study was 679 respondents which were obtained through Fishers formula and a multistage sampling procedure was adopted in getting the sample size while 8 participants were used for the qualitative study. The instrument for data collection was a self structured questionnaire titled"Occupational Hazards Experienced by Brewery Workers Questionnaire" (OHEBWQ) and an unstructured interview guide for the qualitative study. Cronbach alpha reliability test was used to determine the internal consistency of the instrument which gave a reliability coefficient of 0.84. After data collection the collected data were analyzed through SPSS version 25, using mean and standard deviation for the research questions, and a Pearson correlation was used for the Hypothesis which was tested at a 0.05 level of significance.

RESULTS

The results of the findings were presented in the tables below:

Table 1: Mean and Standard Deviation showing the extent of exposure to physical hazards experienced by brewery workers in Rivers State

S/N	Physical Hazards	Mean	Std Dev.	Decision
1	There is poor lighting system in the brewery	1.21	0.41	Low Extent
2	The noise level in the brewery is high	2.52	0.98	High Extent
3	Working in confined spaces	1.22	0.42	Low Extent
4	The temperature level is high in the brewery	1.83	0.56	Low Extent
5	Workers are often exposed to broken bottles	2.53	0.76	High Extent

6	Slips, trips and falls often occurs in the brewery	1.62	0.41	Low Extent
7	There is inhalation of dust from dry grains and yeast	1.55	0.87	Low Extent
8	Workers work in elevated heights	1.22	0.75	Low Extent
9	Most times items are improperly stacked	2.30	0.42	Low Extent
10	There are damaged electrical cables in your workplace	1.21	0.49	Low Extent
	Grand Mean	1.72	0.60	Low Extent

Criterion mean= 2.50

Table 1: showed the mean and standard deviation o the extent of exposure to physical hazards experienced by brewery workers in Rivers State. The grand mean of 1.72±0.60 is less than the criterion mean of 2.50 indicating a low extent of exposure to physical hazards, however there is high extent of exposure to broken bottles (2.53± 0.76) and exposure to high level of noise (2.52 ± 0.98). Hence, the level of exposure to physical hazards among workers in brewery industries in Rivers State was low.

Table 2: Mean and Standard Deviation showing the extent of exposure to Biological hazards experienced by workers in brewery Industry in Rivers State

S/N	Biological Hazards	Mean	Std Dev.	Decision
1	There is poor hygiene practices in the brewery	1.22	0.43	Low Extent
2	Workers are often exposed to bacterial infection from the work process	1.46	0.87	Low Extent
3	There is high exposure of fluid infection in the brewery	1.98	0.64	Low Extent
4	Workers are exposed to microbes during the work process	1.57	0.41	Low Extent
5	There is high rate of communicable diseases exposure due to high population in the brewery	1.86	0.51	Low Extent
	Grand Mean	1.61	0.57	Low Extent

Criterion mean= 2.50

Table 2: showed the mean and standard deviation on the extent of exposure to biological hazards experienced by workers in brewery Industry in Rivers State. The grand mean of 1.61 ±0.57 is less than the criterion mean of 2.50 indicating a low extent of exposure to biological hazards among workers in brewery industries in Rivers state. Hence, the level of exposure to biological hazards among workers in brewery industries in Rivers State was low.

Table 3: Mean and Standard Deviation showing the extent of exposure to ergonomic hazards experienced by workers in brewery Industries in Rivers State

S/N	Ergonomic Hazards	Mean	Std Dev.	Decision
1	Working conditions requires standing for long	1.80	0.61	Low Extent
2	Workers Work in awkward body postures	1.82	0.84	Low Extent
3	Lifting heavy objects is done manually	1.76	0.71	Low Extent
4	Most times workers work without the use of PPE	1.34	0.42	Low Extent
5	Repetitive motion during work	1.98	0.72	Low Extent
6	Poor sitting postures during work leading to Musculoskeletal disorders	1.85	0.56	Low Extent
7	Frequent lifting and stacking of drinks	1.62	0.68	Low Extent
	Grand Mean	1.81	0.64	Low Extent

Criterion mean= 2.50

Table 3: showed the mean and standard deviation on the extent of exposure to ergonomic hazards experienced by workers in brewery Industry in Rivers State. The grand mean of 1.81±0.64 is less than the criterion mean of 2.50 indicating a low extent of exposure to ergonomic hazards. However, the level of exposure to ergonomic hazards among workers in brewery industries in Rivers State was low.

Table 4: Mean and Standard Deviation showing the extent of exposure to mechanical hazards experienced by workers in brewery Industry in Rivers State

S/N	Mechanical Hazards	Mean	Std Dev.	Decision
1	Operations of forklifts, pallet trucks or other machines are often difficult to operate	1.21	0.41	Low Extent
2	There is high accident rate from operating powered industrial trucks	1.38	0.46	Low Extent
3	Vibrations from heavy machines	1.56	0.51	Low Extent
4	Some of the running machines and equipment are not always in good conditions	1.23	0.34	Low Extent
5	There are unguarded machineries in your workplace	1.74	0.42	Low Extent
6	There is excessive noise from machines in the work place	1.97	0.68	Low Extent
	Grand Mean	1.51	0.47	Low Extent

Criterion mean= 2.50

Table 4: showed the mean and standard deviation on the extent of exposure to mechanical hazards experienced by workers in brewery Industries in Rivers State. The grand mean of 1.51± 0.47 is less than the criterion mean of 2.50 indicating a low extent of exposure to mechanical hazards, Hence, the level of exposure to mechanical hazards among workers in brewery industry in Rivers State was low.

Table 5: Mean and Standard Deviation showing the extent of exposure to chemical hazards experienced by workers in brewery Industry in Rivers State

S/N	Chemical Hazards	Mean	Std Dev.	Decision
1	Chemical substances often spill on the floor	1.26	0.75	Low Extent
2	There is exposure to toxic substances daily	2.51	0.77	Low Extent
3	Presence of fumes and gases that can affect breathing like CO2	1.72	0.41	Low Extent
4	Packed gas and caustic chemicals often leak out	1.81	0.65	Low Extent
5	There is exposure to high corrosive substances	1.56	0.64	Low Extent
	Grand Mean	1.77	0.64	Low Extent

Criterion mean= 2.50

Table 5: showed the mean and standard deviation on the extent of exposure to chemical hazards experienced by workers in brewery Industries in Rivers State. The grand mean of 1.77 ±0.64 is less than the criterion mean of 2.50 indicating a low extent of exposure to chemical hazards. However, the level of exposure to chemical hazards among workers in brewery industries in Rivers State was low.

Table 6: Mean and Standard Deviation showing the extent of exposure to psychosocial hazards experienced by workers in brewery Industry in Rivers State

S/N	Psychosocial Hazards	Mean	Std Dev.	Decision
1	Sometimes there is Poor communication among workers	1.21	0.45	Low Extent
2	There is Prolonged working hours	1.98	0.76	Low Extent
3	There is Poor human relation within the brewery industry	1.29	0.36	Low Extent
4	Quarrels and fight among workers often occurs	1.46	0.64	Low Extent
5	There is Stress due to work overload	2.53	0.55	High Extent
6	There is Mental breakdown sometimes due to work stress	1.69	0.32	Low Extent
7	Work is often done under pressure	2.51	0.82	High Extent
8	Poor payment of temporary workers	1.87	0.45	Low Extent
9	Workers are allowed to drink alcoholic drinks while at work	1.21	0.85	Low Extent
	Grand Mean	1.75	0.57	Low Extent

Criterion mean= 2.50

Table 6: showed the mean and standard deviation on the extent of exposure to psychosocial hazards experienced by workers in brewery Industries in Rivers State. The grand mean of 1.75 ±0.57 is less than the criterion mean of 2.50 indicating a low extent of exposure to psychosocial hazards, however there is high extent of working under pressure (2.51± 0.82) and stress due to work overload (2.53± 0.55). Hence, the level of exposure to psychosocial hazards among workers in brewery industries in Rivers State was low.

Table 7: Mean and Standard Deviation showing the safety measures practiced by in brewery Industry in Rivers State

S/N	Safety Practices	Mean	Std Dev.	Decision
1	There are HSE officers available in the brewery	2.87	0.33	High Extent
2	Daily toolbox meeting is often done	2.55	0.29	High Extent
3	There is provision of first aid box for workers	2.87	0.31	High Extent
4	Workers are always trained on safety	2.63	0.30	High Extent
5	There are fire fighting personnel's and fire extinguishers in the company	2.57	0.31	High Extent
6	There is proper house keeping	2.53	0.29	High Extent
7	There is provision of PPE for workers	2.87	0.33	High Extent
8	Routine Inspection is always carried out	2.78	0.31	High Extent
9	Medical facilities are available for workers	2.68	0.30	High Extent
10	Sanctions are given to workers who disobey safety rules	2.57	0.29	High Extent

11	Workers are always trained on their job role	2.64	0.32	High Extent
12	Occupational Hazards and risk policies are available for the workers	2.56	0.29	High Extent
13	There are effective hazards and risk control mechanisms in place	2.67	0.33	High Extent
14	Conferences, seminars and workshops on hazards and safety are usually done for workers	2.53	0.29	High Extent
15	There is prompt repairs of damaged equipment/machine	2.56	0.33	High Extent
16	Management provides workers with operating safety manuals	2.63	0.31	High Extent
17	Chemicals in the breweries are properly stored and labeled	2.66	0.32	High Extent
	Grand Mean	2.65	0.34	High Extent

Criterion mean= 2.50

Table 7: showed the mean and standard deviation on the safety measures practiced in the brewery Industry in Rivers State. The grand mean of 2.65 ± 0.34 is greater than the criterion mean of 2.50 indicating a high extent of safety practices. Therefore, the level of safety practices in the brewery industries in Rivers State was high.

Table 8: Pearson Correlation showing significant relationship between physical hazards and safety practices in brewery industry in Rivers State

Variables		**Safety**	**Physical Hazard**	**Decision**
Safety	Pearson Correlation	1	0.00	Not rejected
	Sig.(2-tailed)		0.99*	
	N	671	671	
Physical Hazard	Pearson Correlation	0.00		
	Sig.(2-tailed)	0.99*	1	
	N	671		

** Correlation is significant at 0.05 level (2-tailed).

Table 8 showed the Pearson correlation on significant relationship between physical hazard and safety practices in brewery industry in Rivers state. The findings of the study showed that there was no significant relationship between physical hazard and safety practice (n= 671; r= 0.00 p>

0.05). Thus, the null hypothesis which stated that there is no significant relationship between physical hazard and safety practices in the brewery industry in Rivers sate was not rejected.

Table 9: Pearson Correlation showing significant relationship between biological hazards and safety practices in brewery industry in Rivers State

Variables				
Safety			**Biological Hazards**	**Decision**
Safety	Pearson Correlation	1	-.004	Not rejected
	Sig.(2-tailed)		0.92*	
	N	671	671	
Biological Hazards	Pearson Correlation	-.004	-0.04	
	Sig.(2-tailed)	0.92*		
	N	671	671	

** Correlation is significant at 0.05 level (2-tailed).

Table 9 showed the Pearson correlation on significant relationship between biological hazard and safety practices in brewery industry in Rivers state. The findings of the study showed that there was no significant relationship between biological hazard and safety practice (n= 671; r= -.004 p> 0.05). Thus, the null hypothesis which stated that there is no significant relationship between biological hazard and safety practices in the brewery industry in Rivers sate was not rejected.

Table 10: Pearson Correlation showing significant relationship between ergonomic hazards and safety practices in brewery industries in Rivers State

Variables		Safety	Hazards	Decision
Safety	Pearson Correlation	1	-.122	Not rejected
	Sig.(2-tailed)		0.03	
	N	671	671	
Ergonomic Hazards	Pearson Correlation	-.122	1	
	Sig.(2-tailed)	0.003		
	N	671	671	

** Correlation is significant at 0.05 level (2-tailed).

Table 10 showed the Pearson correlation on significant relationship between ergonomic hazard and safety practices in brewery industry in Rivers state. The findings of the study showed that there was no significant relationship between biological hazard and safety practice (n= 671; r= -.004 p> 0.05). Thus, the null hypothesis which stated that there is no significant relationship between ergonomic hazard and safety practices in the brewery industry in Rivers sate was not rejected.

Table 4.12 showed the Pearson correlation on significant relationship between ergonomic hazard and safety practices in brewery industry in Rivers state. The findings of the study showed that there was no significant relationship between biological hazard and safety practice (n= 671; r= -.122 p> 0.05). Thus, the null hypothesis which stated that there is no significant relationship between physical hazard and safety practices in the brewery industry in Rivers State was not rejected.

Table 11: Pearson Correlation showing significant relationship between mechanical hazards and safety practices in brewery industries in Rivers State

Variables		Safety	Hazards	Decision
Safety	Pearson Correlation	1	-.002	Not rejected
	Sig.(2-tailed)		0.94	
	N	671	671	
Mechanical Hazards				
Hazards	Pearson Correlation	- .002	1	
	Sig.(2-tailed)	0.94		
	N	671	671	

Table 11 showed the Pearson correlation on significant relationship between mechanical hazard and safety practices in brewery industry in Rivers state. The findings of the study showed that there was a significant relationship between mechanical hazard and safety practice (n= 671; r= -.002 p> 0.05). Thus, the null hypothesis which stated that there is no significant relationship between mechanical hazard and safety practices in the brewery industry in Rivers state was not rejected.

Table 12: Pearson Correlation showing significant relationship between chemical hazards and safety practices in brewery industries in Rivers State

Variables		Safety	Hazards	Decision
Safety	Pearson Correlation	1	-.002	Not rejected
	Sig.(2-tailed)		0.94	
	N		671	
Chemical Hazards	Pearson Correlation	1	-0.02	
	Sig.(2-tailed)	0.94		
	N	671	671	

Table 12 showed the Pearson correlation on significant relationship between chemical hazard and safety practices in brewery industry in Rivers state. The findings of the study showed that there was a significant relationship between chemical hazard and safety practice (n= 671; r=-.002 p> 0.05). Thus, the null hypothesis which stated that there is no significant relationship between chemical hazard and safety practices in the brewery industry in Rivers sate was accepted not rejected.

Table 13: Pearson Correlation showing significant relationship between psychosocial hazards and safety practices in brewery industries in Rivers State

Variables		Safety	Hazards	Decision
Safety	Pearson Correlation	1	-.002	Not rejected
	Sig.(2-tailed)		0.94	
	N	671	671	
Psychosocial Hazard	Pearson Correlation	-.002	1	
	Sig.(2-tailed)			
	N	671	671	

Table 13 showed the Pearson correlation on significant relationship between psychological hazard and safety practices in brewery industry in Rivers state. The findings of the study showed that there was a significant relationship between psychological hazard and safety practice (n= 671; r-.0021 p> 0.05). Thus, the null hypothesis which stated that there is no significant relationship between psychological hazard and safety practices in the brewery industry in Rivers sate was not rejected.

QUALITATIVE RESULTS

The qualitative aspect of the study was done through an interview, using thematic analysis themes emerged based on the objectives of the study study.

The interview comprised of eight (8) participants which were all males, and comprised of workers from various departments in the brewery.

Theme 1: ***what are the hazards in your work place?***

Hazard is anything, condition or situation that has the potential to cause harm, injury or death.

All participants agreed that hazards are part of their work processes and that is why there are safety measures in place to curtail these hazards.

Sub-theme 1.1: ***How long have you worked here?***

Most of the participants have worked for a duration of 1-4years, 5years and above with few working below 1year.

Participant 1: "I have worked here for about 6years now".

Participant 2: "I have been working here for 4years now

Participant 3: "said I have worked over 10years here

Sub-theme 1.2: ***Tell me about your job, what you do during a typical day.***

Most of the participants work in the production, logistics or packaging department.

Participant 4: "I work in the production department in the brewery; my work involves the production of beers and malt.

Participant 2: "I work in the logistics department, my major role is to take stock of the number of products that is been loaded and sent to distributors

Participant: ''I work in the quality assurance department which comes under the production department. My major role is to ensure the quality of our products meets the standard stipulated''

Participant 1: '' I work in the security department; I am the head of security personnel's in the brewery. Every day I and my team ensure that the environment is secured and safety is carried out in all aspects of the industry''

Participant 6: I work in production department, my duty is to produce beers by following the designated procedures and mixtures.

Sub-theme 1.3: ***what are the safety and health hazards of your duty line?***

Most of the participants mentioned some of the hazards they experience in carrying out their duties however, safety measures have been put in place which has made exposure to these hazards very low.

Participant 7: sometimes in the production department there is exposure to dust from barley and wheat grains but we always wear our nose masks so we don't inhale it, most a time the brewery temperature is a bit hot because of the boiling process in the production unit.

Participant 8: said **"**Chemicals used in the production process and carbonation is one of the major hazards we are exposed to, but the management have put safety measures in place to reduce its exposure".

Participant 5: said "during packaging, sometimes bottles fall off and breaks immediately but since workers are on their full PPE there is usually no casualty and we have workers whose duty is to clean it up".

Participant 2: working without the use of appropriate PPE is anunsafe act that could expose any worker to hazards, however most workers use PPE but sometimes some few especially the casual staff becomes negligent".

Participant 1: "The nature of our job requires us to stand for long; repeating the same process over and over every day, our job in the logistics unit is stressful"

Participant 4: "vibrations and noise from machines are always experienced".

Sub-theme 1.4: ***what are the factors that that predisposes workers to hazardous situations in the brewery?*** Majority of the participants said not wearing PPE is a major factor that exposes workers to hazards.

Participant 1: "not following safety process while carrying out your job, not wearing PPE is one major factor that exposes workers to hazards"

Participant 6: unsafe acts by workers and unsafe conditions in the brewery environment too can expose workers to hazards

Sub-theme 1.5: ***How do you protect yourself from these hazards?***

"Most participants said that the use of PPE while working is one sure way of protecting oneself from hazards, following safety guidelines in your duty line and reporting any unsafe conditions in the work place".

Participant 3: "we must wear Personal protective equipment everyday once we get into the brewery. Such as Arm slip, Safety boot, reflective, safety boots, safety caps for securities, gloves, helmets, nose mask, ear muff etc".

Participant 5:"The brewery industry is often fumigated to chase rodents and any other dangerous pest".

Participant 6:"safety and health is very much valued in our industry, we do safety meetings weekly, we do daily toolbox meetings, safety trainings are done, routine inspection is carried out in various units".

Participant 8:"there is provision of complete PPE for all workers both the security staff, we have HSE officers on ground".

Theme 2: ***Describe factors that affect safety in the Brewery?***

Most of the participants agreed that unsafe acts, negligence, human errors, machine errors unsafe conditions are the major factors that affects safety

Participant 3: "casual workers sometimes are seen to work without complete PPE for their job specification, but this is rare otherwise safety is the order of the day here".

Sub-theme 1.6: *Were you provided training on this job?*

All participants said they were given adequate training on their job role, on safety and awareness was created on the type hazard exposure emanating from the work process.

Participant 1:"Yes we are always given orientation and trainings on our job role and on safety trainings too".

Sub-theme 1.7: *what happens if an employee disobeys the company's safety rule?*

Participant 7: "sanctions are given immediately to anyone who disobeys safety rules and is caught".

Participant 4: "There are CCTV cameras all around the brewery, and we have a safety team that monitors it to ensure everything is running smoothly".

Participant 8:"Depending on the offense, sanctions are given like a week suspension without pay or a warning query is issued to the person(s) that disobeyed safety rules".

Sub-theme 1.8: ***How do you respond in the event of a fire, hazardous waste spill, alarm or medical emergency?***

Participant 4: "in the case of fire outbreak, we have a fire service team in the industry".

Participant 1:"we also partner with fire services from companies like Agip, Shell, and Total; we have their emergency fire service numbers".

Participant 3: "we hardly experience any form of fire, accident or emergency because strict safety measures have been put in place to avoid any of such. We also have staff clinic and we have partner hospitals where we use as our HMO and workers are registered with at most 4 of their children and spouse which covers their health insurance and are given adequate medical care".

Participant 7: "sometimes workers fall ill which is natural for humans, they re given sick leave and they get medical care especially for staff".

Sub-theme 1.9: How *do your supervisors demonstrate their involvement in safety and health?*

Participant 8: "Our supervisors are always on ground, each unit in the brewery has a unit head or supervisor who oversees all the activities are running smoothly and then give feedback to the manager".

Participant 1:"supervisors are always everywhere ensuring safety is being complied with, listening to complains and taking them to the management".

Sub-theme 2.1: ***Have you ever seen anyone testing the air, noise level, temperature level or conducting any other survey for possible hazards in the brewery?***

Participant 1: "Yes international brewery has a high standard for safety, recently we were awarded number one in Africa for safety compliance in breweries. Everything, equipment, machines are always put in order; the environment is often fumigated too".

Sub-theme 2.2: ***Have you or anyone you know ever been injured or experienced a job related illness? If yes, how was it solved?***

Participant 2: "Injury hardly occurs here because of the strict adherence to safety. Accident may occur just once or twice in a year and if it occurs, immediate measures will be taken to avoid re-occurrence''.

Sub-theme 2.3: ***what is one objective in your company's program?***

Participant 1:"we survey the area and access risks''!

Participant 5:"Zero Injury''!

Conclusion

In regards to the findings of this study, it has shown that following safety rules is strongly connected to reducing exposure to hazards indicating that safety practices determine the extent of exposure to different forms of occupational hazards. Also, it was found from the study that brewery workers followed safety rules while carrying out their duties and this led to reduced exposure to hazards inherent in the workplace.

Recommendations

1. Managers of brewery industries should continue to put safety measures in place to ensure that workers are not hurt or exposed to hazards in carrying out their job and be ready for other risks.
2. An inspection and tracking team should be set up by breweries management to check different work areas for safety rules and ensure workers are wearing adequate PPE.
3. Management of brewery companies should provide basic health and safety training with special emphasis on younger and new workers, reducing stressors, and providing health education in order to enable them get familiar with mode of operation and safety regulations in the company.

References

Adebiyi, K.A., Charles-Owaba, O. E. & Waheed, M. A. (2007). Safety performance evaluation models: A review. *Disaster Prevention and Management.* 1(6), 178-187.

Awodele, O., Popoola, T. D., Ogbudu, B. S., Akinyede, A., Coker, H. A. & Akintonwa, A. (2014). Occupational hazards and safety measures amongst the paint factory workers in Lagos, Nigeria. *Safety and health at work,* 5(2), 106–111.

Brents, C., Hischke, M., Reiser, R., & Rosecrance, J. (2021). Trunk posture during manual materials handling of beer kegs. *International*

Brewers Association, (2020). *Craft Brewing Industry Production.* http://www.brewersassociation.org/press-releases/2020-craft-brewing-industry-production-report

Centre for Disease (CDC) (2019). *Skin exposures and effects: National institute for occupational safety and health (NIOSH).* http://www.cdc.gov/niosh/topics/skin/default. Html

Elechi, C. E., Prince-Osia, G. N. & George, F. F. (2020). Occupational hazards associated with PABOD brewery workers in Port Harcourt, Rivers State. *International Journal of Creative Thought*, 11(8), 5-9.

International Labour Organization (ILO) (2019). *Work hazards kill millions, cost billions.* http://www.ilo.org/global

ILO (2020). *International labour standards on occupational safety and health.* http://www.ilo.org/global

Mbomgaba, E., (2015). Prevalence of occupational health related risks and use of safety measures among employees in Braliwa processing industries in Rwanda. *Occupational Medicine and Health Affairs. 3:215. Doi: 10. 4172.*

Occupational Safety and Health Administration OSHA (2016). *Five categories of occupational hazards.* http://www.osha.gov/sites

Onuorah, A.N & Eze, S. (2020). Management of work hazard in organization: A study of Nigerian breweries, PLC, Enugu. *International journal of research in management.* 4. 1(2), 2-6.

Solomon, E., (2021). *Management of Work Hazard in Organization: A Study of Nigerian Breweries, PLC, Enugu Research Gate* DOI:10.26808/rs.rm.i10v4.01

Wisdom, J., & Creswell, J. W. (2013). Mixed Methods: Integrating Quantitative and Qualitative Data Collection and Analysis While Studying Patient-Centered *Medical Home Models (pp. 1-5). PCMH Research Methods Series 13.*

World Health Organization WHO (2014). Occupational hazards in the health sector

World Health Organization WHO (2015). *Six common violations in the beer brewing industry, occupational health and safety.*