



# **Occupational Safety Practices And Prevalence Of Accident Among Brewery Industry Workers In Rivers State, Nigeria**

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## **ABSTRACT**

This study investigated the occupational safety practices and prevalence of accident among brewery industry workers in Rivers State. The research design adopted for this study was a descriptive survey research design with a population consisting of 1,600 workers in brewery industries in Rivers State. A proportionate random sampling technique was used to select a sample size of 616. The instrument for data collection was a structured questionnaire with a reliability coefficient of 0.98. Data analysis was done with the aid of the statistical product for service solution (SPSS) version 25.0 using percentage, mean and regression analysis at 0.05 alpha level. The result revealed that the level of occurrence of occupational accidents was high (67.7%). The findings further showed high extent of safety practice ( $3.54 \pm 1.13$ ). The result revealed that there was high availability ( $3.39 \pm 1.15$ ) of safety devices. The result showed that there was a significant relationship between occupational safety practice and other factors such as availability ( $F(1,612) = 25643.93, p < 0.05$ ) and suitability ( $F(1,612) = 1548.46, p < 0.05$ ). It was concluded that, safety practice in breweries is a key strategy to avert accident in any industry. It was recommended among others that, the Institute of Safety Professionals of Nigeria (ISPON) and trade unions should organize periodic workshops and training programmes on occupational safety for the workers in the brewery industries in Rivers State.

**Keywords:** Accident, brewery industry workers, occupational safety practices

## **INTRODUCTION**

Occupational accidents can be prevented if safety measures are practiced adequately by the workers in any occupational setting. Accidents in any work setting presents with it several disadvantages leading to damages, loss of life and properties. Hence, safety measures must be put in place to protect both the workers and to increase productivity. According to Sambo et al. (2012), most accidents in the workplace happen when workers fail to do their work in the safest prescribed possible way. This could probably be the reason for the high rate of injuries reported among workers. The World Health Organization (2012) estimated that, 2.9 billion workers globally are prone to accident at their work environment and the leading cause of occupational death was unintentional injuries which accounted for 41%. Specifically, the Bureau of Labor Statistics (2019) reported that, the percentage of injuries among breweries due to exposure to harmful substances and environments was three times higher (12.5%) than injury percentages within beverage manufacturing (4.3%) and all industries (4.5%) including private, state, and local government; and more than a third of injuries (34.4%) at breweries were due to slips, trips, or falls (STF). Globally, an estimated 2.3 million workers die every year from occupational accidents and work-related diseases, the total economic loss due to this is tremendous (International Labor Organization (ILO), 2014). This according to Jahan (2015) is because the majority of labour force in developing countries live and work in hazardous work environment that worsens their health, social and economic condition. In

Ethiopia, Mulu (2014) reported that, workers who are involved in manufacturing industries including brewery companies, have encountered higher level of workplace accident. Though many reasons can be related to work-related injuries; majority (88%) of the injuries are caused by unsafe working practice (Howe cited in Tezera et al., 2017). In South Africa, about 22% of brewery industry workers also encountered work related injury within 6 months of working period (Chetty, 2006). In Rwanda, Mbonigaba (2012) reported that 86.4% of the workers in brewery industry have experienced accidents among which 25.5% reported falls, 21.8% reported cuts, 17.7% reported electrocution, only 8.6% and 4.5% reported fractures and dislocations. In Nigeria, Uche et al. (2020) reported a prevalence of 79% of injuries among the workers.

Occupational accidents may end up with occupational injuries and diseases, like skin cuts and lacerations, eye injuries, respiratory problems (bronchitis and asthma), hearing impairment, skin diseases, and musculoskeletal disorder (Bankole & Ibrahim, 2012). Examples of exposure to harmful substances or environments include extreme temperatures, water pressure, electricity, noise, and other harmful substances (Centre for Disease Prevention and Control, 2020). Thermal burns (from exposure to temperature extremes) accounted for 6.3% of reported injuries among breweries, more than five times higher than the percentage of burns affecting beverage manufacturers and all industry (both 1.6%), burns and corrosions (from exposure to harmful substances such as acids and caustics) were also elevated among brewery workers (3.1%) (Bureau of Labor Statistics, 2019). Exposure to several of these substances and poorly organized work environment could lead to accident.

Accidents are evitable in any work setting if safety measures are adequately put in place. Accidents are unplanned events which can lead to injury, damage or death. The Occupational Safety and Health Act showed that, an accident is considered recordable if it caused injury in which the injured worker experiences days away from work, requires restricted work or transfer to another job, requires medical treatment beyond first aid, experiences foreign bodies embedded in the eye, loss of consciousness, or death. According to the Brewers of Europe cited in Mbonigaba (2012), it is noted that brewery employees are mainly exposed to the risk of accident which are typically attributed to heavy manual lifting and carrying crates of bottles and other raw materials; due to recurring work as well as packing and leaning, and poor work postures caused by inadequate workstation and process activity design which were mainly due to occupational related risks were lack of protective gears, poor motivation, not comfortable to use/ causes irritation, lack of safety & health education and poor motivation. The Occupational Safety and Health Administration (OSHA, 2019) documented that, the brewery industry has over 265 hazards which were identified from 33 inspections of craft breweries during a six-month period which were mainly due to poor safety practices such as lack of hazard communication, improper electrical setup, lack of personal protective equipment and respiratory protection, lack of control of hazardous energy (due to lack of lock-out-tag-out or machine guarding), and fire safety issues.

Workers in any industry including those working at the breweries in Rivers State, are be prone to occupational accidents which may even be on the increase if safety measures are neglected. Such accidents are not without effects as it can even lead to death, injuries, health impairment and economic loss both to the individual and industry. Although, accidents may be reported by workers to management, of industries, the frequency at which a particular accident occurs is usually not stated; which makes it difficult to estimate the most occurring industrial accidents among workers of breweries. For some reasons, it becomes relatively difficult to proffer enduring solution to accidents in breweries. The issue of safety practices among workers in breweries is a major factor in prevention of accident. Poor safety practices and other factors might affect safety practices in the workplace with its attending disadvantages as it shuts down or slows down productivity, deters the health of the workers, puts the image of the brewery at stake, and disrupts work progress. To a greater extent, safety practices are also not investigated and determined. The foregoing is indicative of the urgent need to fully assess the types of industrial accidents, frequency of occurrence and the possible determinants of the accidents with the view of adopting appropriate safety measures. This is necessary because the menace of occupational accidents in

breweries could be on the increase if safety practices are neglected. These variables could contribute to poor service delivery in Rivers State and low productivity which have a negative effect on the economy and the welfare of the workers. Hence, this study investigated the occupational safety practices and prevalence of accidents among brewery industry workers in Rivers State. The study provided answers to the following research questions:

1. What is the extent of occupational safety practice among brewery industry workers in Rivers State?
2. What is the prevalence of occupational accidents among brewery industry workers in Rivers State?
3. What is the extent to which safety devices are made available for brewery workers in Rivers State?

## METHODOLOGY

The research design adopted for this study was a descriptive survey research design with a population consisting of 1,600 workers in brewery industries in Rivers State. A proportionate random sampling technique was used to select a sample size of 616. The instrument for data collection was a structured questionnaire with a reliability coefficient of 0.98. Data analysis was done with the aid of the statistical product for service solution (SPSS) version 25.0 using percentage, mean and regression analysis at 0.05 alpha level.

## RESULTS

The results of the study are presented below:



**Fig 1: Pie chart showing the percentage distribution of the prevalence of occurrence of occupational accidents among brewery industry workers in Rivers State.**

Fig 1 showed the percentage distribution of the prevalence of occupational accidents among brewery industry workers in Rivers State. The result revealed that the more than half 415(67.7%) of the workers had experienced occupational accidents while 198(32.3%) of the workers had not experienced

occupational accidents. Thus, the prevalence of occupational accidents among brewery industry workers in Rivers State was high (67.7%).

**Table 1: Mean and standard deviation showing the extent of occupational safety practices among brewery industry workers in Rivers State**

S/N	Safety Practices	Mean	SD	Decision
1	Clean and orderly work area	3.40	1.19	High
2	Avoid littering of broken bottle	3.39	1.17	High
3	Organized working area	3.34	1.04	High
4	Follow safety rules and regulations for brewery	3.41	1.21	High
5	Correct colleagues about safety rules	3.47	1.26	High
6	Disposal of broken bottles	3.37	1.09	High
7	Follow safe work procedure	3.36	1.14	High
8	Unsafe condition rectified	3.34	1.07	High
9	Use of foot protection like safety shoes or non-slip footwear	3.50	1.31	High
10	Use of head protection like helmet	3.46	1.25	High
11	Use of eye protection like safety glasses, goggles or face shield	3.25	0.82	High
12	Use of hand gloves like work gloves	3.51	1.30	High
13	Use of hearing protection like ear muff or plug at work	3.33	0.98	High
14	Use of respiratory protection like nose mask	3.37	0.99	High
15	Use of work clothing like coverall, apron or work uniform at work	3.45	1.21	High
16	Availability of first aid box	3.39	1.051	High
17	Provision of adequate water supply	2.99	1.24	High
18	Co-workers adherence safety laws and regulations	3.43	1.15	High
	<b>Grand mean</b>	<b>3.54</b>	<b>1.13</b>	<b>High</b>

**Criterion mean = 2.50**

Table 1 showed the occupational safety practices of brewery industry workers in Rivers State. The result showed that, the grand mean of (3.54±1.13) was greater than the criterion mean of 2.50 which indicated that, the extent of occupational safety practice among brewery industry workers was high. The safety practices included: use of respiratory protection like nose mask (3.37), use of eye protection like safety glasses, goggles or face shield (3.25), provision of adequate water supply (2.99), use of hand gloves like work gloves (3.51), follow safety rules and regulations for brewery (3.50), use of work clothing like coverall, apron or work uniform at work (3.45), adherence to safety rules and regulations for brewery (3.41). Thus, the extent of occupational safety practice among brewery industry workers in Rivers State was low.

**Table 2: Mean and standard deviation showing the safety devices made available for brewery workers in Rivers State.**

S/N	Availability of safety devices	Mean	SD	Decision
1	Availability of safety devices for women	3.34	1.06	High extent
2	Regular provision of safety devices	3.41	1.21	High extent
3	Readiness to ensure workers safety	3.47	1.26	High extent
4	Prevention of workers from utilizing safety materials provided	3.37	1.09	High extent
5	Regular availability and utilization of safety materials	3.36	1.14	High extent
	<b>Grand Mean</b>	<b>3.39</b>	<b>1.15</b>	<b>High extent</b>

**\*Criterion mean = 2.50**

Table 2 showed the mean and standard deviation showing the safety devices made available for brewery workers in Rivers State. The result showed that the grand mean of (3.39±1.15) was greater than the criterion mean of 2.50 which implies that, the extent of availability of safety devices for brewery workers in Rivers State was high. For instance, availability of safety devices for women (3.34±1.06) and regular availability and utilization of safety materials (3.36±1.14) by brewery workers were high.

**Table 3: Regression analysis showing relationship between availability of safety devices and occupational safety practices among brewery industry workers in Rivers State**

Model	Sum of squares	df	Mean square	F	p-value	Decision
Regression	2078.609	1	2078.609	25643.933	.00*	H <sub>0</sub> rejected
Residual	49.607	612	.081			
Total	2128.216 <sup>d</sup>	613				

**\*Significant, p<0.05**

Table 3 revealed the regression analysis of relationship between availability of safety devices and occupational safety practices among brewery industry workers in Rivers State. The result showed that there was a significant relationship between availability of safety devices and occupational safety practice (F(1,612) = 25643.93, p<0.05). Thus, the null hypothesis which stated that there is no significant relationship between availability of safety devices and occupational safety practice among brewery industry workers in Rivers State was rejected.

**Table 4: Regression analysis showing relationship between suitability of safety devices and occupational safety practices among brewery industry workers in Rivers State**

Model	Sum of squares	df	Mean square	F	p-value	Decision
Regression	2119.835	1	2119.835	1548.467	.00*	H <sub>0</sub> rejected
Residual	8.381	612	.014			
Total	2128.216 <sup>d</sup>	613				

**\*Significant, p<0.05**

Table 4 revealed the regression analysis of relationship between suitability of safety devices and occupational safety practices among brewery industry workers in Rivers State. The result showed that there was a significant relationship between suitability of safety devices and occupational safety practice (F(1,612) = 1548.46, p<0.05). Thus, the null hypothesis which stated that there is no significant relationship between suitability of safety devices and occupational safety practice among brewery industry workers in Rivers State was rejected.

## DISCUSSION OF FINDINGS

The findings of the study were discussed below:

The prevalence of occupational accidents among brewery industry workers in Rivers State was high (67.7%). This high prevalence found among brewery industry workers could possibly be due to negligence of the workers. The finding of the study is in line with that of Brent (2021) whose study on occupational injuries among craft brewery workers in Colorado showed high prevalence of accident. The finding of the study corroborates that of Mohammed et al. (2016) whose study on supportive strategies regarding accidents prevention with objectives to evaluate the impact of supportive strategies regarding accidents prevention at home revealed high prevalence of occupational hazards. The finding of the study is at variance with that of Awunor (2011) whose study on health risk assessment of factory workers in the bottling and brewing industries in Benin City, Edo State showed low prevalence, less than 50.0%. The finding of this study is also not in consonance with that of Bright et al. (2020) whose study on occupational health problems associated with workers in brewing industries in Anambra revealed that the prevalence of occupational accident was low. The finding of the study is also at variance with that of La et al. (2012) whose study on the prevalence of accident in Vietnam showed low prevalence. The finding

of the study is in line with that of Sanyang et al. (2017) whose study in the Gambia showed low prevalence of occupational accident. This difference between the present study and previous studies could be due to the difference in location.

The findings of the study revealed that the safety practices included use of respiratory protection like nose mask, use of eye protection like safety glasses, goggles or face shield, provision of adequate water supply, use of hand gloves like work gloves, follow safety rules and regulations for brewery, use of work clothing like coverall, apron or work uniform at work, adherence to safety rules and regulations for brewery. This finding was not anticipated because it was expected that those working in the brewery industry adhere fully to safety measures to avoid injury yet, safety practice was poor, this might be the reason for the high prevalence of accident found. The result of this study also showed other occupational safety practices of respondents which include: use of personal protective wears. The finding of this study is in consonance with that of Adebola (2014) which showed that majority (90.0%) of the respondent comply with safe work practices and high proportion of the respondents (85.9%) have compliance with occupational safety procedure. The present result is consistent with an earlier finding by Fosu-Mensah et al. (2021) which showed that the participants exhibited a good level of safety practice. The similarity found between the previous study and the present one might be due to the homogeneity of the study respondents.

The result showed that the extent of availability of safety devices for brewery workers in Rivers State was low. The result showed that there was a significant relationship between availability of safety devices and occupational safety practice ( $F(1,612) = 25643.93, p < 0.05$ ). The finding of this study is expected because safety measures cannot be practiced if the equipment and tools needed are not readily available. The finding of this study is in consonance with that of Oginyi et al. (2017) which showed availability of safety devices which could be related to safety practices. The finding of this study is also in line with that of Aguwa and Arinze-Onyia (2014) which showed that availability of safety devices could help in the prevention of hazard and practice of safety practice. The finding of this study is also in line with that of Wekoye et al. (2019) who reported that lack of availability of PPE contributed to occupational hazards and poor safety practice among the workers. The finding of this study is similar that of Manjula and De-Silva (2014) whose research on the factors influencing safety behaviours among workers in Sri-Lankan showed that unavailability of personal protective devices were factors which was significantly related to occupational safety practice. The similarity between the present study and previous ones might be due to the homogeneity of the study respondents and the close range between the sample sizes in the different studies.

The extent of suitability of the safety devices for brewery workers in Rivers State was low. The result showed that there was a significant relationship between suitability of safety devices and occupational safety practice ( $F(1,612) = 1548.46, p < 0.05$ ). This finding is also expected because when a workers used unsuitable safety equipment, there will be discomfort and inconveniences which could discourage the workers from practicing safety measures adequately. The finding of this study corroborates that of Ostry et al. (2017) whose study in Western Canada found that suitability of PPE result to compliance of safety measures. It revealed that if there is low availability of PPE, it reduces safety practice of workers. The finding of this study is in line with the report of Sabitu et al. (2014) from a study on suitability of safety equipment among workers in Kaduna metropolis in northern Nigeria which showed that the level of availability of personal protective was high with sub-optimal practice of safety measures against the hazards. The finding of this study is also in line with that of Aguwa and Arinze-Onyia (2014) which showed that availability of safety devices could help in the prevention of hazard and practice of safety practice. The finding of this study is also in line with that of Wekoye et al. (2019) who reported that lack of availability of PPE contributed to occupational hazards and poor safety practice among the workers. The finding of this study is in consonance with Girard et al. (2015) whose research work on Personal Protective Equipment (PPE) as a preventive measure accident among workers in Ilorin, Nigeria revealed that availability of safety equipment which are suitable to workers is significantly related to safety

practice. The similarity between the present study and previous ones might be due to the homogeneity of the study respondents and the close range between the sample sizes in the different studies.

## **CONCLUSION**

Based on the findings of the study, it was concluded that, good safety practice is a major strategy to prevent accident in any industry and the factors related with safety practice among brewery industry workers in Rivers State were: availability and suitability of safety devices.

## **RECOMMENDATIONS**

The following recommendations were put forward based on the findings of the study:

1. The Institute of Safety Professionals of Nigeria (ISPON) and trade unions should organize periodic workshops and training programmes on occupational safety for the workers in the brewery industries in Rivers State.
2. Environment agencies should ensure they visit the breweries on regular intervals to inspect the work environment and supervise the safety practices of the workers.
3. The workers in the brewery industries should make conscious effort on their part to ensure they adhere to safety practices.
4. The managers in the brewery industries should also ensure procurement of safety equipment that are suitable to the workers.

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