

# OCCUPATIONAL HEALTH HAZARDS AMONG RICE FARMERS IN ABI LOCAL GOVERNMENT AREA, CROSS RIVER STATE, NIGERIA

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## ABSTRACT

*Rice farming is a critical Agricultural activity with associated numerous hazards encountered due to its nature of practice and the work environment. The aim of the study was to determine occupational health hazards among rice farmers in Abi Local Government Area, Cross-River State, Nigeria. The study adopted a descriptive cross-sectional study design and multi-stage sampling technique was used to select 291 adults in the households who are rice farmers in Abi Local Government Area, Cross River State, Nigeria. Structured questionnaire was used to collect data from the respondents and data were analysed using SPSS version 25. Most of the respondents 253(86.9%) had experienced back pain, while 273 (93.8%) had experienced general body pain, 263(90.4%) had experienced cuts/injuries from farm tools and 219(75.3%) had experienced body itching. Furthermore, 210 (72.2%) of the respondents had experienced irritation from dust, 239(82.1%) experienced malaria, 192(66%) experienced chronic cough, 150 (51.5%) experienced bronchitis and 143(47.4%) had experienced falls from trees. There was no statistically significant relationship between age of farmers and knowledge level on occupational health hazards among rice farmers ( $p=0.307$ ). Occupational hazards found among rice farmers include back pain, generalized body pain, cuts/injuries, body itching, chronic cough, irritation from dust, falls from trees and malaria. We recommend that there should be increased health education and sensitization on occupational health hazards among rice farmers in the area.*

**Key words:** Rice, Farmer, Health, Occupational hazards

## 1 INTRODUCTION

Farm workers are exposed to myriads of hazards in their farms, rice farming is a critical agricultural activity among farmers with associated numerous hazards encountered due to its nature of practice and the work environment (Asamani, 2020). Rice farmers are exposed to physical, chemical, biological, and ergonomic hazards. International Labour Organisation [ILO], (2010), estimates indicated that about 160 million people suffer from occupational diseases and 2 million people die every year as a result of

occupational accidents and work-related diseases and injuries adding that the agricultural sector constituted one of the most hazardous workplaces. Gupta and Joshi (2002), in Nepal noted that swamps rice cultivation are suitable places for the growth of several types of bacteria, viruses, fungi, mosquitoes, and other parasites. These may result in diseases like malaria, hookworm and skin diseases. Additionally, there are also respiratory diseases attributable to dust and fumes from dry land or upland cultivation preparation and harvesting, moulds and other organic antigens, smoke from

burning rice stubbles, and agrochemicals. The use of chemical agents and other substances in crop management such as fertilizers, herbicides, and pesticides also present enormous hazards to the farm workers. Bosompem and Mensah (2012) and Muilerman (2013), also found that Ghanaian rice farmers experienced various forms of injuries and disabilities from their farming activities.

In Nigeria, Idu, Ajah, & Ifowodo, (2022), conducted a study on assessment of the level of awareness on agrochemicals' safety measures among Rice Farmers in the Federal Capital Territory, Abuja. Most (99.7%) of the farmers were aware of the importance of wearing safety gadgets such as respirator or nose shield when applying agrochemicals, boots or rubber shoes, rubber hat or cap, eye glass or goggle, hand gloves, overall, when applying agrochemicals. Majority of the respondents were aware of "not eating, talking, drinking or stirring chemicals with bare hands when spraying agrochemicals". All the respondents were aware of "keeping agrochemicals safe from children and unauthorized persons" and to return unused chemicals to the container as soon as possible. Akangbe, Komolafe, & Oduwaiye, (2015), carried out a study on the effects of occupational hazards on farmers' productivity in Kwara State, Nigeria; back pain/ general body pain, cut/injury from farm tools, body itching, eye irritation from dust, and malaria were the common hazards encountered by 90% of the farmers. Also, their socio-economic characteristics (gender, age, marital status, educational status, and farm size) were not statistically significant with perceived effects of occupational hazards of respondents. There is paucity of studies concerning the occupational health hazards of rice farmers in Nigeria. The Nigeria governments both at the state and federal levels seeks to increase rice production and reduce the quantity of rice imported into the country, there is a need to ensure that farmers are healthy and safe. Also, majority of the local farmers are migrating

from the traditional farming methods to adopt the modern methods and facilities; such as the used of organic fertilizers, pesticides, herbicides, there is need for proper sensitization and education on the need to adhere to safety. Hence, the need to carry out this study to determine the occupational health hazards among rice farmers in Abi Local Government Area, Cross River State, Nigeria.

## 2. MATERIALS AND METHODS

### 2.1 Study Area

This study was conducted in Abi Local Government Area, Central Senatorial District of Cross River State, Nigeria. Abi LGA with headquarters at Itigidi is made up of Ten (10) council wards, located between latitudes 5°54'23.80" N of the Equator and longitudes 8°02'16.76" E with a population projected at 219,800 in 2022 from the 2006 national population census (National Population Commission, 2022). Abi is among the eight local government areas in Cross River state where rice farming is carried out (Akpan, Ebong, & Emeka, (2015).

The study adopted a descriptive cross-sectional design, comprised of adults in the households who are rice farmers in the area aged from 18 years and above. Using Cochran's formula, the sample size for this study was calculated for population > 10,000 (Araoye, 2003):

$$n_o = \frac{Z^2 Pq}{e^2}$$

Where;  $n_o$  = Desired sample size,  $Z$  = Alpha level of confidence limit at 95 percent (95%) which was 1.96,  $P$  = The proportion in the population with attribute to previous study 50% (0.50) due to lack of similar study among rice farmers in Cross River State,  $q = (1-p) = (1-0.50) = 0.50$

$e$  = Degree of precision or margin of error at 7 percent = 0.07.

Therefore,

$$n_o = \frac{1.96^2 \times 0.50 \times 0.50}{0.07^2}$$

$$n_o = 196.$$

Due to the study design effect, the sample size was multiplied by 1.5

$196 \times 1.5 = 294$ . The sample size for this study was 294.

A multistage sampling technique was employed, involving stratified sampling by wards, streets, and house hold, with random sampling used at each stratum. Semi-structured questionnaires (pretested among rice farmers in Yakurr LGA, Cross River State, a neighbouring LGA) were used for data collection. The questionnaire was divided into four (4) sections A, B, C; D. Section A collected socio-demographic characteristics data of the respondents while sections B, C; D collected data for the knowledge level, specific occupational health hazards faced and the preventive practices of occupational health hazards among the respondents. To evaluate

participants' knowledge levels, 15 questions were asked, each scoring 1 point for a correct response and 0 points for an incorrect one. The total possible score was 15. Participants scoring between 0 and 5 were categorised as having poor knowledge, those scoring 6 to 10 as having average knowledge, and those scoring between 11 and 15 as having good knowledge. Data were analysed using SPSS version 27.0, with a significance level set at  $p \leq 0.05$ .

### 3. RESULTS

The youths within 18-30 years old, 127(43.6%) were the most dominant set of rice farmers followed by 31-40years old 65(22.3%), with a Males: Female of 1:1. Most of them were Christians 228(78.4%), married 156(53.6%), had secondary level of education 109 (37.5%) with a family size of 1-5 members (Table 1).

**TABLE 1: Socio-demographic data of the respondents**

Variables	Frequency (n)	Percentage (%)
<b>Age</b>		
18-30 years old	127	43.6
31-40 years old	65	22.3
41-50 years old	50	17.2
51 years or above	49	16.8
<b>Sex</b>		
Male	146	50.2
Female	145	49.8
<b>Religion</b>		
Christian	228	78.4
Muslim	0	0
Traditional	63	21.6
<b>Marital status</b>		
Married	156	53.6
Single	93	32.0
Divorced	19	6.5
Separated	23	7.9
<b>Level of education</b>		
No formal education	42	14.4
Primary education	36	12.4

Secondary education	109	37.5
Tertiary education	104	35.7
<b>Family size</b>		
1-5 members	137	47.1
6-10 members	133	45.7
11-15 members	17	5.8
16 or more members	4	1.4

**Source:** Fieldwork, (2024).

**TABLE 2a: Knowledge of rice farmers on occupational health hazards**

<b>Variables</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b>Ever heard about occupational hazards among rice farmers (through mass/social media, Agricultural extension officers, education /training)</b>		
Yes	256	88.0
No	35	12.0
<b>Knowing there is recommendation for the use of pesticides</b>		
Yes	210	72.2
No	81	27.8
<b>Knowing there is recommendation for the use of pesticides</b>		
Yes	210	72.2
No	81	27.8
<b>Knowing about policies and methods that have been established to strengthen pesticides risk reduction</b>		
Yes	154	52.9
No	137	47.1
<b>Knowing that pesticides have adverse effects to rice farmers' health</b>		
Yes	245	84.2
No	46	15.8
<b>Knowing about the use of precautionary gears and protective measures in applying pesticides</b>		
Yes	223	76.6
No	68	23.4
<b>Knowing about proper storage, disposal and sanitation of hazardous farm chemicals</b>		
Yes	204	70.1
No	87	29.9
<b>Knowing about wearing respirator or nose shield when applying agrochemicals</b>		
Yes	265	91.1
No	26	8.9

<b>Knowing about wearing PPE (rubber hat/cap, hand gloves, overall, eye glass goggle) when applying agrochemicals</b>		
Yes	254	87.3
No	37	12.7
<b>Knowing about not talking when spraying agrochemicals</b>		
Yes	220	75.6
No	71	24.4
<b>Knowing about not drinking when spraying agrochemicals</b>		
Yes	251	86.3
No	40	13.7
<b>Knowing of not stirring chemicals with bare hands</b>		
Yes	220	75.6
No	71	24.4
<b>Knowing about not keeping agrochemicals containers in safe disposal site</b>		
Yes	256	88.0
No	35	12.0
<b>Knowing about keeping agrochemicals safe children and unauthorized persons</b>		
Yes	277	95.2
No	14	4.8
<b>Knowing about not storing agrochemicals in kitchen or toilet</b>		
Yes	270	92.8
No	21	7.2

**Source:** Fieldwork, (2024).

**TABLE 2b: Summary of Knowledge level of Rice Farmers on Occupational Health Hazards**

<b>Knowledge Level</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Good	203	69.8
Average	75	25.8
Poor	13	4.4
<b>Total</b>	<b>291</b>	<b>100.0</b>

**Source:** Fieldwork, (2024).

**TABLE 3: Occupational health hazards faced by rice farmers**

<b>Variables</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b>Back pain in the past 1, 2 or 3 rice farming season(s)</b>		
Yes	253	86.9
No	38	13.1
<b>General body pain in the past 1, 2 or 3 rice farming season(s)</b>		
Yes	273	93.8
No	18	6.2
<b>Cuts/injuries from farm tools (cutlasses, hoes, etc) in the past 1, 2 or 3 rice farming season(s)</b>		
Yes	263	90.4
No	28	9.6
<b>Body itching in the past 1, 2 or 3 rice farming season(s)</b>		
Yes	219	75.3
No	72	24.7
<b>Mosquito bites from the farm in the past 1, 2 or 3 rice farming season(s) contributing to malaria</b>		
Yes	239	82.1
No	52	17.9
<b>Chronic cough due to dust in the past 1, 2 or 3 rice farming season(s)</b>		
Yes	192	66.0
No	99	34.0
<b>Falls from trees in the past 1, 2 or 3 rice farming season(s)</b>		
Yes	138	47.4
No	153	52.6
<b>Conjunctivitis in the past 1, 2 or 3 rice farming season(s)</b>		
Yes	144	49.5
No	147	50.5
<b>Fertilizer burns in the past 1, 2 or 3 rice farming season(s)</b>		
Yes	164	56.4
No	127	43.6

**Source:** Fieldwork, (2024).

**TABLE 4: Preventive practices on occupational health hazards among rice farmers**

Variables	Frequency (n)	Percentage (%)
<b>How do you prevent harm from agrochemicals?</b>		
By wearing shirt or a piece of cloth as an improvised mask	57	19.6
By wearing sunglasses as improvised goggles	107	36.8
By wearing ordinary socks to hold the pair of trousers in place	27	9.3
By using gloves and shoes.	41	14.1
Don't use any agrochemical	58	19.9
<b>Other preventive method specified</b>	<b>1</b>	<b>0.3</b>
Preferred traditional process	1	0.3
<b>Always hiring labourers to help out rice farming processes</b>		
Yes	240	82.5
No	51	17.5
<b>Always using any Personal Protective Equipment [PPE] (e.g. rubber hat/cap, hand gloves, overall, eye glass goggle or safety boot, apron during rice farming processes</b>		
Yes	276	94.8
No	15	5.2

Source: Fieldwork, (2024).

**TABLE 5: Relationship between age and gender of the rice farmers and knowledge level**

Variables	Good knowledge n(%)	Average knowledge n(%)	Poor knowledge n(%)	X <sup>2</sup> (df)	p- value
<b>Age</b>					
18-30 years old	81(27.8%)	40(13.7%)	6(2.1%)	7.151(6)	0.307
31-40 years old	47(16.2%)	14(4.8%)	4(1.4%)		
41-50 years old	39(13.4%)	11(3.8%)	0(0%)		
51 years or above	36(12.4%)	10(3.4%)	3(1%)		
<b>Sex (gender)</b>					
Male	111(38.1%)	30(10.3%)	5(1.7%)	5.467(2)	0.065
Female	92(31.6%)	45(15.5%)	8(2.7%)		

Source: Fieldwork, (2024).



#### 4. DISCUSSION

The study showed that majority of the respondents (69.8%) have good knowledge level of the occupational health hazard involved in rice farming, 25.8% had average knowledge while 4.5% of them had poor knowledge level. This is agreed with Santaweek, Boonyakawee, & Siri Wong, (2020) findings.

Eighty-eight per cent (88%) of the respondents have heard about occupational health hazards among rice farmers, (52.9%) knew about policies and methods that have been established to strengthen pesticides risk reduction and this reduces their exposure from these risk of harmful health hazards as related to agrochemicals use, storage, handling and other rice farming activities. This finding was consistent with that of Ebron, Lopez, & Ebron, (2021), where many were aware of policies or method that have been established to strengthen pesticides risk reduction. Most of the rice farmers (84.2%) in this study, knew that pesticides have adverse effects to rice farmers' health but (23.4%) of them did not know about the use of precautionary gears and protective measures in applying pesticides and (29.9%) of them did not also know about proper storage, disposal and sanitation of hazardous farm chemicals and 24.4% did not know of no stirring agrochemicals with bare hands. These findings have brought to light cases of agrochemical hazards due to the farmers' lack of knowledge considerably. Hence, proper education on the way to apply and stored these agrochemicals by rice farmers in the area is recommended. These were consistent with Ebron et al, (2021) findings on health and welfare awareness of rice farmers and vegetable famers in San Jose, Camarines Sur, Philippines and Idu et al. (2022) findings on assessment of the level of awareness on agrochemicals' safety measures among rice farmers in Abuja, Nigeria.

The younger age group 18 to 30 years and males have a higher percentage of good knowledge level about occupational hazards among rice farmers in the study area. However, they are not statistically significant. This may be explained by the increase number of respondents from this age group involved in rice farming.

Majority of the respondents have experienced back pains, general body pains and cut or injuries from farm tools like cutlasses, hoes or other farm tools, body itching, conjunctivitis, cough and mosquito bites contributing to malaria. Back pain and general body pains are the resulting health conditions due to prolonged standing, bending, tilling, weeding, planting while injuries/cuts from farm tools are due to mechanical effects during site preparations, tilling weeding as well as harvesting, while body itching are due to exposures to the rice plants/seeds, weeds and agrochemical substances directly to their skin. These findings are consistent with finding of Akangbe et al. (2015), on perceived effects of occupational hazards on farming productivity in Kwara state, Nigeria and Bhattarai, Singh, Baral, Sah, Budhathoki, & Pokhare, (2016) findings on work related injuries among farmers from rural Nepal.

This study found that most of the famers (82.5%) always hired labourers to help out rice farming processes and used personal protective equipment (PPE) like rubber hats/caps, hand gloves, overall, safety boot, eye glasses or goggles during rice farming processes. Hiring of labourers to help in rice farming processes reduces stress, as well as promotions of farm production. Using any of the PPE will also help in preventing exposure to occupational hazards. Asamani, (2022) and Santaweek, Chapman, & Siri Wong, (2013) obtained similar results to this study in their researches.



## 5. CONCLUSION

In conclusion, Occupational hazards occur among rice farmers in Abi LGA, Cross River State, Nigeria and include: back pain, generalized body pain, cuts/injuries, body

itching, chronic cough, irritation from dust, conjunctivitis, falls from trees and mosquito bites contributing to malaria. There should be increased health education and sensitization on occupational health hazards among rice farmers.

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