[Report]

Perceived Effects of Occupational Hazards on Farmers' Productivity in Kwara State, Nigeria

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Abstract **:** This study investigated the perceived effects of occupational hazards on farmers' productivity in Kwara State, Nigeria. A total of 160 respondents were selected using a multi-stage random sampling technique. Descriptive statistical techniques such as frequency count, percentages as well as Pearson Product Moment correlation analysis for empirical analysis were used. The results show common agricultural production to include maize, yam and cassava. The results also revealed prevalent occupational hazards that include cut/injury from farm tools, malaria due to mosquito bite, and general body pain. The findings further revealed that injury from farm tools and general body pain had high effects on agricultural productivity. The Pearson Product Moment Correlation analysis showed no significant relationship ($P \leq 0.05$) between selected socio-economic characteristics with the perceived effects of occupational hazards on productivity. Based on the findings, the study concludes that occupational (farming) hazards, most especially general body pain, had negative effects on agricultural productivity. The study recommends that government and relevant agencies should encourage farmers by providing for them protective equipment at subsidized cost through extension agents who will train farmers on their use. Also, public health agents should educate farmers on personal health care practices in order to ensure good health status of farmers.

Keywords **:** perceived effects, occupational hazards, productivity, farmer, Kwara Sate.

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Introduction

Agriculture is the major occupation of people in Nigeria, employing over 70% of the active labour force. Agriculture is mostly practiced in the countryside by rural dwellers in small scale through traditional intensive method which makes it labour intensive oriented [1, 2]. Small scale farming in particular is characterized by low levels of technology, high workloads, and primitive hand tools such as hoes and ploughs [3].

Agricultural work all over the world is hazardous, resulting in a large numbers of injuries to farmers or even death. According to the International Labour Organization (ILO), the agricultural sector is one of the most hazardous to health worldwide [4]. Olatunji *et al* pointed out that the productivity of farmers is affected by a number of occupational hazards and health problems such as Malaria, musculoskeletal disorders, farm injuries, yellow fever, Diarrhoea diseases, respiratory diseases and skin disorder [5]. Other literature explained the effects of some hazards on farming activities: Exposure to dust, fumes gases and particulates, snake and insect, weather and climate, carrying and lifting loads, poor farming posture and hazard due to farm tools [6].

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Some of the reason is because farmers do not put on the necessary protective clothing when using chemicals and necessary equipment is not used [7].

The health status of farmers determines the output of his/her labour supply and hence agricultural productivity. Egbetokun *et al* opined that there is a correlation between health and productivity of labour [8]. Ill-health arising from agricultural work has negative implications for agricultural productivity. A study in Nigeria, for example, found that the vast majority of women farmers practicing mixed cropping system suffered from intense muscular fatigue, heat exhaustion, and skin disorders, forcing them to take days off from attending to their crops [9]. Ngambeki & Ikpi stated that these hazards make farmers not to utilize fully all inputs at their disposal, reduces productivity, and equally impacts negatively on farm profit levels [10]. This study was therefore borne out of the need to ensure that farmers, most especially small scale farmers, in the study area become aware of the potential effects of farm hazards on agricultural productivity.

The general objective of the study was to determine the perceived effects of occupational hazards on farmers' productivity in Kwara State, Nigeria. Specifically, the study seeks to describe the socio-economic characteristics of respondents, identify the types of agricultural activities practiced by respondents, identify the occupational health hazard encountered by respondents, and determine farmers' perceived effects of occupational hazard on their productivity.

In this study, we tested whether the socioeconomic characteristics of respondents affects the perceived effects of occupational hazards on productivity or not.

Methodology

The study was conducted in Kwara State in the North-Central zone of Nigeria. The capital of the State is Ilorin, which lies 306 km northeast Lagos and 500 km southwest of Abuja. Kwara State is bounded in the north by Niger State, in the south by Osun State, in the east by Kogi State and in the west by Oyo State and has an international boundary with Benin Republic. There are sixteen Local Governments Areas (LGAs) in the State: Asa, Baruten, Edu, Ekiti, Ifelodun, Ilorin-East, Ilorin-West, Irepodun, Isin, Kaima, Moro, Offa, Oke-Ero, Oyun and Patigi.

The population of the study was comprised of all farmers in Kwara State. A two stage random sampling was adopted for this study. Stage 1 involved a random selection of sixteen communities, one from each of the sixteen LGAs in Kwara State. The selected communities were Malete, Alapa, Fufu, Eegbejila, Oke-oyi, Aiyedun, Osi, Oko, Omupo, Edidi, Offa, Ipe, Lafiaji, Kpada, Kaima, and Okuta. Stage II involved a random selection of 10 farmers from each of the communities selected. A total of one hundred and sixty (160) respondents were selected as the sample size for the study.

This study was approved by the Lecturers and Ethical Committee of the Department of Agricultural Extension and Rural Development, University of Ilorin. Primary data used for this study was collected with the aid of a structured interview schedule within the period of March 2010 to April 2010. The questions were structured in a manner that presented respondents with fixed response alternatives, and divided into sections, each attempting to obtain information on the objectives of the study from respondents. This was done to ensure focussed, relevant and easy to code responses that aided analysis of results. A total of 160 interview schedules were administered in the period of six weeks. The interview was done personally by the researchers with the assistance of trained individuals across the 16 LGAs of the state.

Perceived effects of occupational health hazard were measured with the use of 5 point likert-type scale as strongly agree (SA) =2, agree (A) = 1, undecided (U) = 0, disagree (D) = −1 and strongly disagree (SD) = −2. These scores were used to collate the mean score. The levels of effect arbitrarily determined by this study were: mean (0.00 to 1.49) = low effect; mean (1.50 and above) = high effect.

The descriptive statistical tools used were percentage, frequency count, mean and range. To test whether the socioeconomic characteristics of respondents affect perceived effects of occupational hazards on productivity or not, pearson product moment correlation (PPMC) was used. This was because the tool can be used to consider the relationship between two sets of variables X (independent) and Y (dependent) as well as to show the strength and direction of the relationship which exists between the two variables involved.

The computation formula, r is given as:

$$r = \frac{n\sum XY - \sum X \sum Y}{\sqrt{[N(\sum X^2) - (\sum X)^2][N(\sum Y^2) - (\sum Y)^2]}}$$

Results and Discussion

The results of data analysis in Table 1 revealed that the majority (88.8%) of the respondents were male. This implies that there were not many female farmers in the study area. The reason for this result may be that farming is very stressful and laborious. Akinsanmi also pointed out that lands are mostly inherited from parent to male child in Nigeria [11]. The majority (23.1%) of the respondents were above 60 years of age. The mean age of the respondents was 47.49, with a standard deviation of 15.9. This implies that most of the respondents are aged and are expected to be actively involved in farming activities as reported by Onansanya in a study that farmers in this age range participated actively in production and processing of agricultural products [12].

The data analysis further revealed that the majority (86.3%) of the respondents were married (Table 1). The larger percentage of married farmers in the study area is an indication for family labour, as there will be more hands from wives/husbands and children in agricultural activities thereby reducing expenses in labour hiring. Most (53.1%) of the respondents had no formal education. More so, the majority (59.4%) of the respondents' farm size was between 2-5 hectares of land, with a mean score of 10 hectares.

Table 1 further indicates that a high proportion (69.4%) of the respondents indicated farming as their major occupation. By implication, there should be more farm produce in the study area. As regards farming experience, Table 1 shows that most (31.3%) of the respondents had more than 40 years. This implies that most farmers in the study area would have had several experiences of different forms of farm hazards and precautionary measures.

The results of data presented in Table 2 showed that all (100%) farmers were into maize production, yam production (92.5%), cassava production (90.6%),

Table 1. Socio-economic characteristics of the respondents

Characteristics	Frequency (%)
Gender	
Male	142 (88.8)
Female	18 (11.2)
Total	160 (100.0)
Age (years)	
Less than 30	29 (18.1)
30 – 40	28 (17.5)
41 – 50	30 (18.8)
51 – 60	36 (22.5)
greater than 60	37 (23.1)
Total	160 (100.0)
Marital status	
Single	15 (9.4)
Married	138 (86.3)
Divorced	– (–)
Widowed	7 (4.4)
Total	160 (100.1)
Educational level	
No formal education	85 (53.1)
Primary	29 (18.1)
Secondary	22 (13.8)
Tertiary	24 (15.0)
Total	160 (100.0)
Farm size (Ha)	
Less than 2	24 (15.0)
2 – 5	95 (59.4)
Above 5	41 (25.6)
Total	160 (100.0)
Primary occupation	
Farming	111 (69.4)
Civil servant	18 (11.3)
Artisan/Craftsman	17 (10.6)
Petty trade	14 (8.8)
Total	160 (100.1)
Farming experience (years)	
1 – 10	13 (8.1)
11 – 20	36 (22.5)
21 – 30	36 (22.5)
31 – 40	25 (15.6)
greater than 40	50 (31.3)
Total	160 (100.0)

green vegetable production (89.4%), tomato production (80.6%), pepper production (83.8%), okro production (88.8%), guinea corn (84.4%), poultry (88.8%), goat rearing (74.4%), cowpea (53.8%), sheep rearing (47.5%), garri frying (25.6%), cocoa production (11.3%), and pig rearing (10.6%). The prevalent and widespread cultivation of maize, yam and cassava in the study area can be attributed to the fact that the climate and soil requirement in most parts of the state favour its germination. Fakayode *et al* noted that maize is the most productive grain crop in the middle and northern belts of Nigeria, where sunshine is adequate and rainfall is moderate [13]. This finding is similar to Ayanwuyi *et al* report that maize cultivation is the most common crop production, followed by yam and cassava, among farmers in Kwara State Nigeria [14].

The data shown in Table 3 show that back pain/general body pain, cut/injury farm tools, body itching, eye irritation from dust, and malaria were the common hazards encountered by 90% and above among farmers. The high rate of cuts from farm tools is a clear indication of the high rate of use of crude farm tools not properly handled among farmers in the study area. During agricultural activities, most of these farm implements require awkward posture for effective use, resulting in back/general body pain, which were also indicated by the majority of the respondents. Maize production as a common crop among farmers requires plantation during the raining season (May – June in the Northern Guinea Savanah of Nigeria), during which mosquitoes breed around farm sites [15]. This may be related to the high rate of malaria among farmers in the study area. This finding supports the Adesiji *et al* report that the most prominent disease condition affecting farm families was malaria fever [16]. Ajayi & Ugwu also found that Nigerian subsistence farmers spend as much as 13% of total household expenditure on treatment of malaria alone [17].

Other farm hazards include chronic cough due to dust (69.4%), bronchitis (53.4%), falls from trees (38.8%), conjunctivitis (33.1%), cut/injury from machine (20.0%) and gunshot accidents (2.5%).

The data illustrated on the level of effects of occupational hazards on agricultural productivity in Table 4 revealed statements of perceived effects of farming hazards such as injury from farm tool cuts or stepping

Table 2. Agricultural activities and prevalence of agricultural produce of the respondents

Activities practiced	Frequency* (%)
Maize production	160 (100.0)
Yam production	148 (92.5)
Cassava production	145 (90.6)
Green vegetable	143 (89.4)
Okro production	142 (88.8)
Poultry	142 (88.8)
Guinea corn	135 (84.4)
Pepper production	134 (83.8)
Tomato production	129 (80.6)
Goat rearing	119 (74.4)
Cowpea production	86 (53.8)
Sheep rearing	76 (47.5)
Rice production	56 (35.0)
Garri frying	41 (25.6)
Kolanut production	24 (15.0)
Cocoa production	18 (11.3)
Pig rearing	17 (10.6)
Rabbit rearing	16 (10.0)
Fishing	15 (9.4)

*: multiple response

Table 3. Occupational hazards encountered by the respondents

Farm occupation hazards	Frequency*(%)	Rank
Back pain/general body pain	159 (99.4)	1
Cut/Injury farm tools	159 (99.4)	1
Body itching	153 (95.6)	3
Eye irritation from dust	153 (95.6)	3
Malaria from mosquito bite	144 (90.0)	5
Chronic cough due to dust	111 (69.4)	6
Bronchitis	86 (53.4)	7
Conjunctivitis	53 (33.1)	8
Falls from trees	62 (38.8)	9
Snake bite	42 (26.6)	10
Cut/injury from machine	32 (20.0)	11
Gunshot accidents	4 (2.5)	12

Note: 1 – 12 implies, highest to lowest rank, *: implies multiple response

on sharp object on farm can lead to poor productivity, general body pain can reduce farmers' working capacity and hence farmers' productivity were ranked first and second, respectively, and were perceived to have high negative effects on farmers productivity.

The results in Table 4 on other statements of perceived effects of farming hazards such as stings of some insects can results into farmers' inefficient productivity, skin rashes due to improper handling of agrochemicals can reduce farmers' performance, tiredness due to long distance trekking can lower farmers' productivity, body itching can result in farmers' inefficient productivity and discomfort from inhalation of dust and pollen can lead to low productivity were further revealed that these farming hazards have low effects on farmers productivity. Variability in response to various statements is an indication of farmers understanding that the health of a farmer is directly related to his efficiency in the field and consequent output.

Pearson product moment correlation (PMC) analysis in Table 5 shows that all the selected socio-economic characteristics of the respondents (gender, age, marital status, educational status, and farm size) were not statistically significant, with perceived effects of occupational hazards of respondents. In other words, the perceived effects of occupational hazards experienced by farmers in the study area were not influenced by the socio-economic characteristics of respondents. A similar study by Onasanya found no significant relationship between farm-related health problems and farmer productivity [12].

Table 4. Level of effects of occupational hazards on productivity among respondents

Perceived effects of farming hazards on agricultural productivity	SA	A	U	D	SD	Mean effect score	Mean rank	Level of effect
	F	F	F	F	F (%)			
Body itching can result in farmers' inefficient productivity	77 (48.1)	61 (38.1)	4 (2.5)	18 (11.3)	0 (0.0)	1.23	6	Low
Skin rashes due to improper handling of agrochemicals can reduce farmers' performance	78 (48.8)	72 (45.0)	0 (0.0)	10 (6.3)	0 (0.0)	1.36	5	Low
General body pain can reduce farmers' working capacity and hence his/her productivity	128 (80.0)	21 (13.1)	0 (0.0)	11 (6.9)	0 (0.0)	1.66	2	High
Tiredness due to long distance trekking can lower farmers' productivity	91 (56.9)	57 (35.6)	7 (4.4)	5 (3.1)	0 (0.0)	1.36	6	Low
Stings of some insects can result in farmers' inefficient productivity	74 (46.3)	78 (48.8)	2 (1.3)	4 (2.5)	2 (1.3)	1.46	4	Low
Discomfort from inhalation of dust and pollen can lead to low productivity	56 (35.0)	79 (49.4)	11 (6.9)	12 (7.5)	2 (1.3)	1.09	7	Low
Injury from farm tool cuts or stepping on sharp object on farm can lead to poor productivity	139 (86.9)	18 (11.3)	0 (0.0)	3 (1.9)	0 (0.0)	1.89	1	High
Grand mean score						1.48		

SA: strongly agree, A: agree, U: undecided, D: disagree, SD: strongly disagree, 1-7 implies highest to lowest rank; mean (0.00-1.49): low effect on productivity, mean (1.50 and above): high effects on productivity

Table 5. Correlation estimate of relationship between selected socio-economic characteristics and perceived effect of occupational hazards on productivity

Characteristics	Correlation coefficient	Probability	Decision
Gender	−0.011	0.891	Not significant
Age	−0.101	0.207	〃 〃
Marital status	−0.027	0.736	〃 〃
Educational status	0.030	0.736	〃 〃
Farm size	0.052	0.514	〃 〃

Conclusion

Based on the findings in this study, it was concluded that the respondents (farmers) in the study area perceived that occupational (farming) hazards had negative effects on agricultural productivity. The results further ascertained that cut/injury on farm and general body pain had a high effect on agricultural productivity in the study area. The study therefore recommends the need for the government and relevant agencies to encourage farmers by providing them protective equipment at subsidized cost through extension agents who will train farmers on their use. Also, there is a need for a public health agency to educate farmers on personal health care practices and the need to consult medical personnel as soon as possible in case of any form of occupational hazard.

Conflicts of Interest

The authors declare no conflicting interest in carrying out this study.

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ナイジェリアクワラ州における農業労働者の生産性への作業の危険性の影響

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要　　旨：ナイジェリアのクワラ州において, 作業の危険性の農業従事者の生産性へおよぼす影響について自覚的評価に基づいて調べた．多段階無作為抽出法を用いて全160名の回答者を選別した．実証分析のためのピアソンの積率相関係数解析と共に頻度や割合などの記述的統計手法を用いて分析を行った．調査の結果, 共通の農業生産物はトウモロコシ, ヤムイモ, キャッサバであった．また, 共通して多い作業上の危険は農具による切傷／傷害, 蚊刺しに起因するマラリア, および全身性疼痛であり, 農具による傷害および全身性疼痛が農業生産性に大きな影響を及ぼしていることが明らかになった．農業従事者の社会–経済学的特徴と自覚されている農業生産性への作業の危険性の影響との間には, ピアソンの積率相関係数を用いた解析においては有意な相関は認められなかった．これらの結果にもとづき, 作業（農業）における危険, とくに全身性の疼痛が, 農業生産性に負の効果をもたらすと結論する．この研究からは, 政府と関係機関が農業従事者に保護具の使用法を訓練する普及員を通して保護具を安価で提供し, 農業労働者に保護具の使用を督励することが推奨され, 農業従事者自身が良好な健康状態を維持するための健康管理について教育を行うことが公衆衛生関係者には求められる．

キーワード：影響知覚, 作業の危険性, 農業生産性, 農業労働者, クワラ州．

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