



E-ISSN: 2320-7078

P-ISSN: 2349-6800

JEZS 2019; 7(6): 14-16

© 2019 JEZS

Received: 10-09-2019

Accepted: 12-10-2019

**Iwunze JI**

Tropical Disease Research Unit,  
Department of Animal and  
Environmental Biology, Imo  
State University, P.M.B. 2000  
Owerri, Nigeria

**Amaechi AA**

Tropical Disease Research Unit,  
Department of Animal and  
Environmental Biology, Imo  
State University, P.M.B. 2000  
Owerri, Nigeria

## Current pest management practices, health impact and pesticide safety by farmers in Obowo, Imo state, Nigeria

**Iwunze JI and Amaechi AA**

**Abstract**

To assess Current pest management practices, health impact and pesticide safety by farmers in Obowo, Imo State a cross sectional study was conducted using a structural questionnaire and focal group discussion. Results indicated that chemical practice (76.0%) was the current pest management adopted by the farmers. Notably, 69.0% do not consider any pesticide use pattern. Nearly 36.0% of the participants follow the product label 29.0% uses protective clothing as safety practice to prevent pesticide exposure. Forty nine (49.0%) were of the view that pesticide affect human health, (38.0%) affirmed that it affect livestock while (13.0%) had it that it affect the environment. This study highlighted a need for immediate implementation of strict pesticide use regulations and recommended educational programs for pest control professionals, growers, and pesticide retailers. In addition, there is a need to inform farmers about integrated pest management to prevent severe health complications, which may occur as a result of unsafe and inappropriate use of pesticides.

**Keywords:** Current pest management, health impact, pesticide safety, farmers

**Introduction**

As the world population is expected to grow 50 percent over the next 50 years to 9 billion people. This population growth, combined with the diet demands of a wealthier populace, is expected to double world food demand by 2050 <sup>(1)</sup>. Assuming production, regulation and innovation trends of the past several decades continue, global pesticide production will be 2.7 times higher in 2050 than in 2000, exposing humans and the environment to considerably higher levels of pesticides. The demand for greater agricultural production poses a challenge perhaps as great as global warming. In addition to their agricultural use in crop protection, pesticides are important public health tools that are used to prevent vector-borne disease and to increase food supplies <sup>(1)</sup>. Pesticides are widely used throughout the world, especially in agriculture for crop protection <sup>(2, 3)</sup>. According to the World Health Organization 20% of pesticide use in the world is focused in developing countries, and this use is increasing <sup>(2)</sup>. Studies regarding pesticides are considered important in order to decrease pesticide risk and help to improve public health policies <sup>(3, 2)</sup>. Human exposure to pesticides occurs primarily through dietary residues, outdoor pesticide exposures, indoor pesticide exposures, occupational exposures, and through unsafe use of pesticides on domestic animals <sup>(4)</sup>. Worldwide, a significant number of people are deceased annually from the consequences of pesticide exposure <sup>(5)</sup>. Short-term complications such as acute pesticide poisoning have been reported as major consequence in the farming community <sup>(4)</sup>. There are reported long term health effects, including carcinogenic and endocrine disrupting properties, especially on vulnerable groups <sup>(6)</sup>.

According to previous studies, factors contributing for the morbidity and mortality of pesticide exposure included inadequate knowledge <sup>(7)</sup>, non-use or inappropriate use of PPE <sup>(8, 9)</sup>, improper storage of pesticides at home <sup>(4, 10)</sup>, negative attitude towards pesticide <sup>(7)</sup>, and inappropriate practices. All pesticides have the potential to harm human, animals, or other living organisms and the environment if used incorrectly. However, recent research has shown that pesticides may also have negative impacts on public health. Studies have demonstrated acutely toxic effects at high doses, as well as chronic effects at low levels of exposure <sup>(11)</sup>. In Nigeria few studies have been conducted on pesticide use knowledge and practices. There are no previously published studies regarding Current pest management practices, health

**Corresponding Author:****Iwunze JI**

Tropical Disease Research Unit,  
Department of Animal and  
Environmental Biology, Imo  
State University, P.M.B. 2000  
Owerri, Nigeria

impact and pesticide safety by farmers in Obowo. Our study focused on assessing Current pest management practices, health impact and pesticide safety by farmers in Obowo.

## Materials and methods

### Study area

This study was carried out in Obowo Local Government Area of Imo State, South East Nigeria. The geographical coordinates of the area is, Latitude  $5^{\circ}10'1''N$ - $5^{\circ}5'1''N$  and Longitude  $6^{\circ}35'1''E$ - $7^{\circ}28'1''E$ . It has an area of 198 km<sup>2</sup> and the vegetation characteristics are tropical rain forest. It experiences a moderate rainfall, with an annual rainfall of 1500mm and average minimum temperature of 20°C. It has two distinct seasons; wet and dry season. The major occupation of the people is farming which is done at subsistence level. Also they produce good quantity of vegetable, palm oil, kernel, broom (local ones) and baskets. Some of the people also embraced small scale trading and fishing. Their houses are made of brick walls with corrugated metal sheets roofs, few live in mud houses with thatched roofs [12]. Source of water in these area include village stream, boreholes and roof catch water which are stored in buckets, cans etc.

### Ethical clearance/ consent seeking

Ethical clearance and permission was approved by the Post Graduate Research Board of the Zoology Department of Imo State University, Owerri, Nigeria. Informed consent was obtained from village heads and participants. before commencement of the research.

### Study Population

The study populations were people residing in Obowo Local Government Area. Due to the difficulties in going from house to house, the study participants were assembled at their different town halls.

### Data Collection/Questionnaire administration

Data collection was done by questionnaire method and Focal Group Discussion. The researcher and his team administered the questionnaire to the participants, those that could not read or write were assisted in filling the questionnaire while the literate ones filled by themselves. Before the questionnaires were distributed at each site, Focal Group Discussion were held to explain more facts and to strengthen the response of the questionnaire.

### Data Analysis

Data obtained from the questionnaire were analyzed using percentage and formula respectively. Values were tested using Chi Square.

### Results

The result showed that Current pest management practice adopted by the farmers in the study area (Table 1) showed that (76.0%) of the participants adopted chemical as their current pest management practice followed by mechanical method (10.0%), cultural methods 8(8.0%) while biological method was the least (6.0%). Pesticide use pattern adopted by the farmers (Table 2) showed that (69.0%) do not consider any pattern, (10%) affirmed to Spraying before harvesting stage 21 (21.0%) while spraying after 4pm. Safety practice used to prevent pesticide exposure (Table 3) showed that following the product label (36.0%) were the most used

followed by wearing special shoes (28.0%), wearing special gloves (7.0%) while non reported wearing eye mask and wearing a special face mask. Knowledge of the health impact of using pesticide (Table 4) showed that (49.0%) were of the view that pesticide affect human health followed by people that said it affects livestock (38.0%), while (13.0%) attested that it affects environment.

**Table 1:** Current pest management practice adopted by the farmers

Pest management practice	Respondents	Percentage
Cultural	8	8.0
Biological	6	6.0
Mechanical	10	10.0
Chemical	76	76.0
Total	100	100.0

**Table 2:** Pesticide use pattern adopted by the farmers

Pesticide use pattern	Respondents	Percentage
Spraying after 4pm	10	10.0
Spraying before harvesting stage	21	21.0
Do not consider	69	69.0
Total	100	100.0

**Table 3:** Safety practices to prevent pesticide exposure

Safety practice	Respondents	Percentage
Wears an eye mask	0	0.0
Wears special gloves	7	7.0
Wears special shoes	28	28.0
Follows the product label	36	36.0
Wears a special face mask	0	0.0
Protective clothing	29	29.0
Total	100	100.0

**Table 4:** Knowledge of health impact of using pesticides

Health impact	Respondents	Percentage
Pesticides affect human health	49	49.0
Pesticides affect livestock	38	38.0
Pesticides affect the environment	13	13.0
Total	100	100.0

## Discussion

In this study we sought to assess Current pest management practices, health impact and pesticide safety by farmers in Obowo. The response rate of invited participants to the questionnaire interview in the present study was relatively higher than that in similar studies [13, 14], indicating good intentions to participate.

The majority of the farmers (76%) used chemical pesticides solely to control insect pests in their vegetable crops. Only 24% of the farmers used other methods (biological, cultural, and mechanical) for insect pests control. High dependency on chemical pesticides was also reported in the Bara and Dhading districts of Nepal [15]. The present study showed that 69% of the respondents do not consider any any pesticide use pattern while 21% sprays before harvesting. Safety practices to prevent pesticide exposure shows that Pesticide label reading and following instructions during application were the highest 36.0%. The participants' knowledge of health impact of using pesticides on was relatively accurate; this finding was consistent with other studies [16, 17]. The result that about half of the participants were of the view that it affects human health. World Health Organization has recommended the use of pesticides only by trained people [2]. For most pesticides, using protective measures results in a decrease of exposure to

pesticides. Similar reductions are seen for farm workers using gloves compared to those not using gloves <sup>[18]</sup>. The use of protective measures could contribute to decreasing the health effects of pesticides. Also, this would lead, as expected, to a decrease in poisoning prevalence parallel to the reduction in exposure. The study found that most of the farmers' knowledge on several aspects of pesticide was very limited. Improper handling and indiscriminate use of pesticides can increase health-related risks and expenses to both farmers and consumers. Farmers use chemical pesticides without considering insect pest monitoring and economic thresholds, pesticide label instructions, pre-harvest interval requirement, proper use of personal protective equipment and clothing, potential impact on non-targets and the environment, which collectively form the basis of Insect Pest Management. The influence of the government agricultural extension program on improving farmer's knowledge on pesticide use appears inadequate, and farmers solely depend on local pesticide retailers for technical guidance. Poor pesticide safety and use situations are attributable to weak pesticide regulatory and enforcement systems. There is need to educate the farmers on pesticide use, safety and pest management through extension training and workshops.

### Conclusion

Insect, pest, and disease management are primary constraints to production of food in developing countries such as Nigeria. The study found that most of the farmers' knowledge on several aspects of pesticide was very limited. Improper handling and indiscriminate use of pesticides can increase health-related risks and expenses to both farmers and consumers. The influence of the government agricultural extension program on improving farmer's knowledge on pesticide use appears inadequate, and farmers solely depend on local pesticide retailers for technical guidance. There is a need to inform farmers about integrated pest management through Ministry of Agriculture to prevent severe health complications, which may occur as a result of unsafe and inappropriate use of pesticides.

### References

1. WHO World Health Organization, recommended classification of pesticides by hazard and guidelines to classification. *Geneva, Switzerland*, 2004.
2. WHO. World Health Organization, safe use of pesticides. Fourteenth report of the WHO expert committee on vector biology and control. World Health Organization Technology Rep Series 1990; 813:1-27.
3. Ecobichon DJ. Pesticide use in developing countries. *Toxicology*. 2001; 160(1-3):27-33.
4. Ngowi AV, Mbise TJ, Ijani AS, London L, Ajayi OC. Pesticides use by smallholder farmers in vegetable production in Northern Tanzania. *Crop Protection*. 2007; 26(11):1617-1624.
5. Konradsen F, van der Hoek W, Cole DC, Hutchinson G, Daisley H, Singh S. Reducing acute poisoning in developing countries-options for restricting the availability of pesticides. *Toxicology*. 2003; 192(2, 3):249-261.
6. Food and Agriculture Organization of the United Nations International Code of Conduct on the Distribution and Use of Pesticides, Guidance on Pest and Pesticide Management Policy Development, 2010.
7. Nalwanga E, Ssempebwa JC. Knowledge and Practices

- of In-Home Pesticide Use: Community Survey in Uganda. *Journal of Environmental and Public Health*. 2011; 200:1-8.
8. Mekonnen Y, Agonafir T. Pesticide sprayers' knowledge, attitude and practice of pesticide use on agricultural farms of Ethiopia. *Occupation Medicine*. 2002; 52(311-315).
9. Ajayi O, Akinnifesi F. Farmers' understanding of pesticide safety labels and field spraying practices: a case study of cotton farmers in northern Côte d'Ivoire. *Science Reserve Essays* 2007; 2(6):204-210.
10. PAN Africa, PAN UK. PAN UK's project Food & Fairness, Hazardous pesticides and health impacts in Africa. Pesticide Action. Network. Briefing 2007, 6.
11. Alavanja MC, Hoppin JA, Kamel F. Health effects of chronic pesticide exposure: Cancer and neurotoxicity. *Annal. Reverse Public Health*. 2004; 25:155-197.
12. Iwunze JI, Amaechi AA, Ukaga CN, Nwoke BEB, Ajero CMU, Nwoke MC *et al*. Impact of Treated nets in the control of Malaria in Avutu and Umuariam Communities in Obowo Local Government Area of Imo State, Nigeria. *International Invention of Scientific Journal*. 2019; 3(2):478-484
13. Atreya K. Pesticide use knowledge and practices: gender differences in Nepal. *Environment Reserve*. 2007; 104(2):305-11.
14. Recena MC, Caldas ED, Pires DX, Pontes ER. Pesticides exposure in Culturama, Brazil-knowledge, attitudes, and practices. *Environment Reserve*. 2006; 102(2):230-6.
15. Salameh PR, Baldi I, Brochard P, Abi Saleh B. Pesticides in Lebanon: a knowledge, attitude, and practice study. *Environmental Reserve*. 2004; 94(1):1-6.
16. Mainali RP, Thapa RB, Tiwari S, Pokhrel PA, Ansari AR. Knowledge and practices on eggplant fruit and shoot borer, *Leucinodes orbonalis* Guenee management in Dhading and Bara districts of Nepal. *Albanian Journal of Agriculture and Science* 2010; 13:6-13.
17. Oliveira-Silva JJ, Alves SR, Meyer A, Perez F, Sarcinelli PN, da Costa Mattos RC. Influence of socioeconomic factors on the pesticides poisoning, Brazil. *Reverse Saude Publication*. 2001; 35(2):130-5.
18. Woodruff TJ, Kyle AD, Bois FY. Evaluating health risks from occupational exposure to pesticides and the regulatory response. *Environmental Health Perception*. 1994; 102(12):1088-96.