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EFFECTIVENESS OF ENVIRONMENTAL HEALTH INSTRUCTION ON HEALTH KNOWLEDGE OF MEAT SELLERS IN ONITSHA METROPOLIS OF ANAMBRA STATE

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ABSTRACT
The purpose of this study was to ascertain the effectiveness of environmental health instruction on the health knowledge of meat sellers in Onitsha Metropolis. The design of this study was quasi-experimental. Specifically, it was a pre-test, post-test research design involving intact groups. The population of the study comprised all the 464 meat sellers in the area of the study. All the 464 meat sellers were studied. A researcher-developed instrument titled "Environmental Health Knowledge Instruction" (EHKI) was used to collect data. The face and content validity of EHKI were established by the researcher through the use of 3 experts. The questionnaire was pre-tested with 15 meat vendors from an abattoir located at Awka. The data collected were analysed using the Kudder Richardson (K – R21) method. The environmental health knowledge instruction was carried out in two stages. The training of research assistants lasted for one week while that of the meat sellers lasted for four weeks. The pre-test and post-test were administered on the research participants at the beginning and end of the instruction respectively. The extraneous variables that could likely affect the results of the experiment were also controlled. Mean scores were used to answer the research questions. Findings indicated that meat sellers after environmental health instruction recorded a higher environmental health knowledge mean score than before intervention. Accordingly, it was recommended among others that mass media campaigns on environmental health education should be used and complemented with other methods that have been found to be very efficacious in influencing knowledge of environmental health.

Keywords: Effectiveness; Environmental Health Instruction; Health Knowledge; Meat Sellers.

Introduction

Meat is very important to mankind. Apart from vegetarians, all human beings eat meat due to its nutritional value to the body. Meat refers to every edible part of any slaughtered animal, whether in its natural state or has been subjected to frozen, chilled, salted, and canned or other preservative processes (WHO, 2014). Due to the high demand for meat in Nigeria and other parts of the world, slaughtering and selling of meat has become lucrative business among meat sellers.

Meat sellers refer to all the people who either slaughter animals for sale in abattoirs, hawk meat using wheel barrows or sell meat using tables (Nelson, 2016; Younes & Bartram, 2019). These three categories of meat sellers exist in any place meat is slaughtered or sold and they also constitute major distributors of meat in every society.

In Anambra State, there are a number of public slaughter houses and a few private meat processing plants distributed in cities and villages where the public buy their meat daily. Ideally, slaughter houses (abattoirs) and the environs as well as meat sellers are expected to exhibit and observe healthy environmental sanitation and personal hygiene. Experience has shown that more often than not, this ideal is not maintained by meat sellers in the state. Thus, the activities of meat sellers in Anambra state and Onitsha Metropolis in particular constitute a serious health challenge to every individual.

The environmental sanitation at the abattoirs as maintained by meat vendors seem to be too poor and discouraging to meat buyers. According to Adams (2016) and Figueras (2000), meat handling requires hygienic conditions. Weobong (2021) also noted that most meat vendors use unsafe water to wash their meat. Fasanmi and Sansi (2018) also reported that meat vendors in Nigeria use unsafe tables to display meat for sale and use unsafe knives in cutting operations. This is made worse by the hawkers that carry the meat in wheel barrows uncovered, thereby exposing the meat to flies or microbial contamination.

Adelegan (2012) observed that in Nigeria, many abattoirs dispose their waste directly into streams or rivers and also use water from the same source to wash slaughtered meat. In some instances, solid wastes are deposited with other urban wastes some distance from the abattoir (Shannon, 2016).
Serious consequences relating to national productivity and development can arise from lack of hygiene and sanitation of such abattoirs and meat stalls. Edema (2005), reported that the Food and Agricultural Organization (FAO) to have indicated that illness due to contaminated food (meat inclusive) was perhaps one of the most widespread health problems in the contemporary world and constitutes an important cause of reduced economic productivity. Nearly 90 percent of diarrhea – related deaths according to Younes and Bartran (2001) and WHO (2014) have been attributed to unsafe or inadequate water supplies and sanitation. These conditions, according to Hughes and Koplan (2005), affect a large part of the world's population. An estimated 1.1 billion persons (one sixth of the world's population) lack access to clean water and another 2.6 billion to adequate sanitation (Hughes & Koplan, 2005). The meat sellers are inclusive in the affected population. All these problems could be put under control through adequate application of

environmental health education by the meat sellers.

According to Adams (2016), and Sule (2011) health education is potential for achieving environmental health. In the views of Beall (2002) health education involves health facts, information descriptions or skills acquired through health instruction or experience for the purpose of improving wellness and living condition. For the purpose of this study health education is an aspect of general education concerned with health and associated problems. It is environmental health education when the focus is on environmental safety.

Adara (2010) defined environmental health education as an aspect of general health education which is designed to develop a citizenry that is aware of safe environment. It is also defined by Winser (2015) as an aspect of general education which is concerned with healthy environment and its associated problems. According to Adedibu (2010) it is a kind of education that helps people acquire knowledge, attitudes, motivation, commitments and skills to work individually and collectively towards finding solutions to environmental health problems and prevention of environmental challenges. Onyechere (2016) and Kola-Olusanya (2011) added that the main objectives of environmental health education relate to developing awareness, knowledge, attitudes, skills, evaluating ability and participation of the recipients in environmental issues. This implies that one major aim of environmental health education is to improve people's environmental health knowledge.

Knowledge means familiarity with someone or something, which can include facts, information, descriptions or skills acquired through experience or education (Adedibu, 2010). Similarly, Ogbonna (2002) noted that knowledge can be implicit (as with practical skills or expertise) or explicit (as with the theoretical understanding of a subject). The implicit dimension of knowledge according to Ogbonna (2002), suggests practice which are defined by Sule (2011) as habitual or customary performance or operation. Sule further noted that practice is a repeated performance or systematic exercise for the purpose of acquiring skill or proficiency. It is the action or process of performing or doing something.

Operationally, environmental health knowledge means a process of educating people on matters related to environmental health with the purpose of making safe environmental health an asset valued by individuals and groups. Similarly, process of developing people's proper attitudes towards safe environmental health activities and providing opportunities for them to carry out these activities. The essence of environmental health instruction is to impart positively on the knowledge and practice of the people.

It is therefore understandable that any environmental health instruction has to be efficient and effective in order to impact positively on the environmental health knowledge of the people (Nelson, 2016). In this study, environmental health instruction is a part of health education concerned with bringing about, through educational method and means, the health behaviour that is required on the part of the people on order to control physical, chemical and biological processes, influences and factors which may exert or likely to exert significant effects on the health of man in his society. The environmental health instruction that is planned for the meat sellers is the one that aims at making them efficient in personal hygiene; effective in environmental sanitation and in general should be used to create positive impact on their environmental health knowledge of meat sellers.

Some factors that can influence people's health knowledge include gender and level of education (Adelegan, 2002). Most of the meat sellers are males with few females (Adams 2016). Since meat business is carried out by both male and female sellers, it is therefore important to find out whether gender has any significant influence on the health knowledge of the people.

The meat sellers also have different levels of education (Potter, 2000). A few of them have university degrees; some others have either 0'level qualifications; first school leaving certificates (FSLC) or did not attend any formal education. These different levels of education according to Environmental Protection Agency (EPA) (2010) may have some effects on their health knowledge. Since these people are of different levels of education, it is necessary to ascertain whether educational attainment have any influence on the health knowledge of meat sellers.

Statement of the Problem

Meat as a source of protein is very important to human health. Its handling or processing requires adequate health knowledge and practice to avoid food poisoning resulting from contaminated meat. It is expected that meat sellers should process meat in hygienic manners to avoid contamination. This involves washing their hands and tables very well and avoiding the practice of exposing the meat to sun, flies or other vectors. The WHO (2014) reported that 60 percent of food borne diseases in Africa are meat poisoning. This is due to improper handling practices, contaminated materials and lack of hygiene throughout the meat processing chain from slaughtering to consumption.

In almost all abattoirs in Anambra state and Onitsha Metropolis in particular, butchers and meat sellers still use vehicle tires to roast slaughtered animal skins and these vehicle tires contain chemical elements which are injurious to human health. Observations have shown that meat sellers use unclean tables in displaying meat as well as unhygienic knives for cutting the meat and these could be injurious to human health. The activities of

those who sell meat in wheel barrows by exposing the meat to excessive sunlight, flies and microbial contaminations constitute additional health problem. It is in the light of the environmental health challenges posed by the activities of meat sellers in Onitsha Metropolis of Anambra state that this study was carried out to ascertain the effectiveness of environmental health instruction on the health knowledge of meat sellers in Onitsha Metropolis.

Research Questions

Three research questions guided the study.

1. What is the effectiveness of environmental health instruction on health knowledge of meat sellers in Onitsha Metropolis?
2. What is the effectiveness of environmental health instruction on health knowledge of male and female meat sellers in Onitsha Metropolis?
3. What is the effectiveness of environmental health instruction on health knowledge of meat sellers of different levels of education in Onitsha Metropolis?

Research Method

The design of this study was quasi-experimental. Specifically, it was a pre-test, post-test research design involving intact groups. The design is presented in thus:

Group	Pre-test	Treatment	Post-test
Experimental	Q_1	X_1	Q_2

Key: Q_1 = Pre-test for the experimental group
X_1 = Treatment of the experimental group
Q_2 = Post-test for the experimental group

The study was carried out in Onitsha Metropolis. The population of the study comprised all the 464 meat sellers in the area of the study comprising 102 meat sellers in Onitsha Main Market Abattoir; 96 meat sellers in Onitsha New Motor Parts Abattoir; 105 meat sellers in Onitsha Tollgate Abattoir; 87 meat sellers in Odumodu Abattoir; and 74 meat sellers in Nteje Abattoir. All the 464 meat sellers were studied. A researcher-developed instrument titled "Environmental Health Knowledge Instruction" (EHKI) was used to collect data. The face and content validity of EHKI were established by the researcher through the use of 3 experts all in the Faculty of Education, Chukwuemeka Odumegwu Ojukwu University, Anambra State. The questionnaire was pre-tested with 15 meat vendors from an abattoir located at Awka. The data collected were analysed using the Kudder Richardson (K – R21) method and this yielded 0.93 coefficient value. The environmental health knowledge instruction was carried out in two stages.

Stage one was the training of research assistants while stage two was the actual training of the meat sellers. The training of research assistants lasted for one week while that of the meat sellers lasted for four weeks. The pre-test and post-test were administered on the research participants at the beginning and end of the instruction respectively. The extraneous variables that could likely affect the results of the experiment were also controlled. Mean scores were used to answer the research questions.

Presentation of results

Research Question 1: What is the effectiveness of environmental health instruction on health knowledge of meat sellers in Onitsha Metropolis?

Table1: Effectiveness of Environmental Health Instruction on Meat Sellers after Intervention (n = 464)

Study Groups	N	$\bar{X}$	SD	$\bar{X}$ Difference
Pre-Test	464	52.35	16.55	
Post –Test	464	82.26	14.71	29.91

The data in Table 1 showed the environmental health instruction mean difference scores $\bar{X}$= 29.91 of the meat sellers after environmental health intervention. The findings of the study showed that the post-test environmental health knowledge mean score X=82.26 of the meat sellers was higher than their knowledge mean score $\bar{X}$= 52.35 before environmental health intervention. This means that the environmental health instruction is effective because the meat sellers improved after the intervention.

Research Question 2: What is the effectiveness of environmental health instruction on health knowledge of male and female meat sellers in Onitsha Metropolis?

Table 2: Effectiveness of Environmental Health Instruction on Health Knowledge of Male and Female Meat Sellers in Onitsha Metropolis (N = 464)

Gender	N	Pre-Test $\bar{x}$	Post-Test $\bar{x}$	$\bar{(X)}$ Difference
Male	281	76.6	96.00	19.4
Female	183	77.84	98.72	20.88

Data in Table 2 showed that the male meat sellers recorded pre-test environmental health instruction mean of $\bar{X}$= 76.6 and post-test environmental health instruction mean of $\bar{X}$ =96.00 with mean difference of $\bar{X}$ =19.4. The female meat sellers on the other hand recorded pre-test environmental health knowledge mean of $\bar{X}$=77.84 and post-test environmental health instruction mean of $\bar{X}$=98.72 with mean difference of $\bar{X}$=20.88.

Research Question 3: What is the effectiveness of environmental health instruction on health knowledge of meat sellers of different levels of education in Onitsha Metropolis?

Table 3: Effectiveness of Environmental Health Instruction on Health Knowledge of Meat Sellers of Different Levels of Education in Onitsha Metropolis (N = 464)

Level of Education	N	Pre-Test $\bar{x}$ score	Post-Test $\bar{x}$ Score	$\bar{X}$ Difference
Primary	292	58.37	70.15	11. 78
Secondary	105	49.4	61.50	12.1
Tertiary	67	74.73	84.02	9.29

The results of the study in Table 3 shows that meat sellers with secondary education gained higher environmental health knowledge mean scores $\bar{X}$=12.1 than those with primary education, $\bar{x}$ =11.78 and tertiary education $\bar{x}$ =9.29.

Summary of Major Findings

Based on data analysis, the following major findings were made:

1. The meat sellers after environmental health instruction recorded a higher environmental health knowledge mean score than before intervention.
2. Meat sellers who were females gained higher environmental health knowledge mean difference scores after environmental health instruction than the males.
3. Meat vendors with secondary education gained higher environmental health knowledge mean score than those with primary and tertiary education respectively), after environmental health instruction.

Discussion of Findings

The findings of the study showed that the post-test environmental health knowledge

mean score of the meat sellers were higher than their pre-test knowledge mean scores. The findings of the study were in consonance with those documented by Fasanmic, Olukole and Kelind; Haileselassic, Taddele, Adhana and Kalayou (2012); and Isaac (2013), who observed that there was improvement in health knowledge and increase in good health practice of their research participants after educational interventions. Furthermore, a similar study on the effect of environmental health instruction on meat related-knowledge of the research participants, in Pankshin Community, Nigeria by Abiola (2005) was also in consonance with this present study. The result revealed a significantly higher increase in knowledge of the research participants after health instructions. These results suggested that environmental health instruction can promote an improvement in the environmental health knowledge of the meat sellers.

This finding of this study was in agreement with that documented by Adesemoye, Opere and Makinde (2006) who examined the effect of health education on health knowledge of abattoir workers and found that the knowledge gain differed remarkably by gender and education. The study also revealed that females had lower pre-test knowledge and higher post-test knowledge. The fact that the pre-test knowledge was higher showed that they already knew about health knowledge, so the mean difference was expected and the females might be paying more attention to issues concerning meat, read about meat and discussed more about meat. Interestingly, this finding was in agreement with that documented by Polprasert and Tran (2013). Polprasert and Tran examined the effects of teaching environmental health education on the health knowledge of post food sellers in Uganda, and observed that males gained lower health knowledge as compared to mean gain scores of female food sellers.

With respect to level of education, the results of the study showed that as the meat sellers level of education increased their ability to acquire, retain and be able to use environmental health knowledge do not increase correspondingly. Meat sellers with tertiary education gained lowest environmental health knowledge mean scores compared to mean difference scores among sellers with secondary and primary education, respectively. This result was surprising, because ordinarily, it would have been expected that those with tertiary education would have a significantly higher mean difference scores compared to others. Meat sellers' education has been seen as a key determinant of health knowledge (Chukwu, 2008). Better educated meat sellers seem to be more willing to engage in innovative behaviour than the less educated ones. Better educated meat sellers are also seen to be more willing to have more knowledge of environmental health than less educated ones because of their literacy, greater familiarity with modern institutions

and a greater likelihood of rejecting a fatalistic attitude towards life. There was evidence that for whatever reason, meat sellers' education indeed promotes environmental health knowledge in most communities (Edema & Omemu, 2004). The reason attributable to this unusual phenomenon in this present study could be that this group of sellers, who had tertiary education, took the teaching sessions for granted and they might assume they already knew everything about environmental health and as such did not show adequate seriousness.

Conclusion

The conclusion of the study is that meat sellers with secondary education gained higher health knowledge mean scores than those with primary and tertiary education. The result of the study also indicated that gender and level of education did not necessarily influence meat sellers' health knowledge.

Recommendations

A number of recommendations that arose from this study are stated below:-

1. There is the need to include environmental health instruction in the mobile schools for meat sellers and market people in Anambra State as a way of exposing them to adequate environmental health information which will improve their health knowledge, as well as aid them in engaging in positive health practices in their areas of business.
2. The environment for health instruction should be made as informal as possible to eliminate what looks like student-teacher relationship as found in formal learning environment, to enable the meat sellers express themselves freely and thereby learn more.
3. Meat sellers should be encouraged by government to enroll in health education programmes and should be provided with educational leaflets/information on health knowledge.
4. Mass media campaigns on environmental health education should be used and complemented with other methods that have been found to be very efficacious in influencing knowledge of environmental health.

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