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ASSESSMENT OF FOOD SAFETY MEASURES AMONG PORK MARKETERS IN IBADAN NORTH LOCAL GOVERNMENT AREA OF OYO STATE

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ABSTRACT

The study was conducted to assess the food safety measures among pork marketers in Ibadan North local government area of Oyo state. Snowball sampling techniques was used in the selection of respondents. Data were analysed using descriptive statistics such as frequency distribution and percentages while inferential statistics such as chi-square and Pearson Product Movement Correlation (PPMC) were used to analyse the hypothesis of the study. The result indicated that 71.7% of the respondents were female while 28.3% were male. The result also revealed that the mean age of the respondents to be 42 years, while 79.2% of the respondents were married. The Chi-square analysis showed that sex(x^2=2.555), marital status(x2=0.202), educational status(x^2=0.404), membership of community groups (x^2=0.785), and access to credit facilities (x^2=0.772) were not significant in determining the food safety measures of pork marketers. It was only buying of pork for marketing (x^2=0.029) that was significant in determining the food safety measures of pork marketers. The PPMC result on the respondents' safety practices adopted and their personal characteristics such as age, household size and years of experience were statically not significant. in conclusion, it was revealed that Ibadan North Local Government Area's pork marketers was dominated by women in the study area. There was no significant difference between male and female counterparts. Therefore, it was recommended that Pork marketers' association and government can work hand in hand to educate pork marketers on the hazards of chemical handling and chemical safety measures. Pork marketers staying at proximity can work together as a group and make provision for joint transportation of their meat products to their various destinations and purchase joint storage facilities in other to enjoy economies of scale and invariably reduce meat spoilage and losses in pork marketing.

Key words: Food safety, Pork meat, Marketing

INTRODUCTION

Pigs are one of the domestic animals found in Nigeria and most parts of West Africa. They are primarily reared for the production of meat, known as pork, and fat, called lard. Pigs produce litters twice a year, with each litter consisting of between eight (8) and sixteen (16) piglets. However, pig rearing and consumption are not popular in Muslim areas of Nigeria due to religious beliefs (Anyiro et al., 2013).

Despite these perceptions, pigs are highly prolific animals with a production rate better than that of most other domestic animals. Pigs have a high conversion rate of 1:5 for the gross energy consumed, allowing them to convert compounded fats into meat more cheaply and rapidly than other domestic animals (Ezeibe, 2010). Pork is an excellent source of animal protein, offering high energy content and being attractive, nutritious, tasty, and tender. This quality is likely because the slaughtered animals are often young (Anyiro et al., 2013).

Due to these advantages, many entrepreneurs have seized the opportunity to enter the pork marketing and consumption industry. However, it is crucial not to overlook the safety aspects for both pork sellers and consumers.

Meat inspection is generally perceived as the sanitary control of slaughter animals and meat, aiming to provide safe and wholesome meat for human consumption and ensuring that only healthy, physiologically normal animals are slaughtered (Cadmus et. al. 2008). Abnormal animals are separated and handled appropriately. The global burden of illnesses caused by food borne diseases is disproportionately burdened on the populations of low- and middle-income nations in the Asian and African continents, with children being the most severely impacted, likely contributing to high child malnutrition rates (WHO, 2019).

Pork production plays a significant role in providing food security, alleviating poverty, generating employment, enhancing social status, offering drought power, transportation, income savings, insurance, financial security, and providing inorganic manure for crop farming in both urban and rural economies (Thornton, 2010; Kambashi et al., 2014). Pork consumption increased at an annual growth rate of 10.8% during 1980-1990 and 4.0% in 1990-2000 (FAO, 2005). Both small-scale and large-scale pig farms exist in Nigeria, but they differ in efficiency, output, and feed resource utilization.

Pig farming significantly contributes to the livelihoods of many Nigerians by supplying animal protein and essential nutrients (Anyiro et al., 2013). The annual per capita meat consumption in Nigeria is projected to triple from 2012 to 2030 due to human population growth and increased demand for animal protein. Factors affecting pork consumption in a locality include economic growth (income per capita/household income), population growth, urbanization, pork prices, dietary diversity, consumer preferences, environmental conditions, and cultural, social, and religious beliefs (Delgado, 2003).

Nigeria faces a dietary animal protein shortage due to its growing population, with the daily protein intake per capita at 46 g/kg, below the FAO's recommended minimum of 66 g/kg (WHO, 2007). This shortage poses a threat of protein malnutrition, and pig farming has the potential to bridge this protein deficit gap. Pork production is particularly attractive to farmers in developing countries like Nigeria due to the rising demand for pork and pork products, specialization, automation, production and trade of inexpensive feedstuffs, market liberalization, low-cost energy, and advancements in genetics and feeding strategies (Chauvin et al., 2012).

Pork consumption is becoming increasingly popular as a substitute for traditional meat sources such as beef, chicken, mutton, and chevon, with chicken being the primary competitor to pork consumption (Pluhar, 2010). This study aims to assess the food safety measures among pork meat marketers in the Ibadan North Local Government Area of Oyo State. To achieve this goal, the study has outlined the following specific objectives:

i describe the socio-economic characteristics of the pork marketers

ii examine the determinant of food safety knowledge among pork meat marketers; and

iii determine the constraints to use of safety measure among pork marketers.

RESEARCH METHODOLOGY

Description of the study area

The study was carried out in Ibadan North Local Government Area (LGA) of Oyo state. It covers a large expanse of land with area of about 420 sqm. The headquarters of the Ibadan North Local Government Area is located at Agodi gate. It lies between Latitude 7º 38,N to 7 º 44,N and the longitude 3º 88 E and 3º 95E. With the Global positioning system coordinates in the north by 7º22,36.2496º, east 3º56,23.2296 (*www.manpower.com.ng*) The types of livestock's majorly kept in the area are cattle, goat, sheep and pig and they are reared under extensive or free range system. The population of the people living in the area is 308,119 based on the (2006) report.

Snowball sampling technique was employed in the selection of the respondents in Ibadan North Local Government Area. This involved a selection of the first pork marketer and subsequently meeting other pork marketers recommended by the previous pork marketers until one hundred and twenty (120) pork marketers (respondents) were reached.

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

The result in table 1 showed that seventy-one point one (71.1%) were females while 28.3% of the respondents were male. This showed that majority of the respondents in the study area were women. This is an indication that women dominate beef marketing in the study area and that beef marketing is usually seen as an occupation dominated by the female gender due to the roles involved which is traditionally believed to be the work of women. This observation may also be due to more of the men being engaged in other related activities such as transportation, loading and off-loading, market park activities amongst others (Baiyegunhi and Fraser 2009).

The mean age of the respondents was forty-two years (42years), 63.3% of the respondent were between 41-50 years old and 16.7% of the respondents were between 51-60 years old. This implies majority of the respondents were 41-50 years and are still young and were within their active year which can help them in ensuring good safety measure for the pork being marketed. Majority 79.2% of the respondents were married, 10% were widowed while the remaining respondents were either single or divorced. This is an indication that majority of the respondents in the study area were married and are likely to be responsible for the safety of the food they eat in order to ensure the safety of their family members, and this also will help in ensuring the safety of the pork they market.

Ninety point eight (90.8%) of the respondents were Christians and 5.8% were Muslims. This implies that majority of the respondents were Christians and are more likely to be favourably disposed to consumption of pork. Having a large market base would call for ensuring food safety by the pork marketers in order to avoid epidemy in the study area.

The household result shows 4-6 persons were recorded for 57.5% of the respondents while 31.7% had 7-9 household members. The implication of this is that the respondents had sizeable family members which may assure marketers of extra helping hands in their bid to ensure the safety of the pork they market.

Fifty percent (50.0%) of the respondents had secondary education, 26.7% had tertiary education, 11.5% had primary education, 6.7% had adult literacy while 5.0% of the respondents had no formal education. This implies that most of the respondents in the study area had one form of education or the other which will inform them of the need to ensure the safety of the pork they market. Forty-seven point five (47.5%) of the respondents had marketing experience of 6-10years, 35.8% had marketing experience of 1-5 years while, 11.7% of them had 11-15 years of experience, 3.3% had 16-20 years of experience while 1.7% of them had 21-25 years. This implies that a little below average of the respondents had relatively long years of experience which plays a very important role on how they handle the pork they market.

Long years of experience will enhance their capability of ensuring food safety. Mafimisebi and Okunmadewa, 2006 affirmed that experience is the basis of success and progress in business- when there is lack of experience, the likely outcomes have been shown to be low income for marketers. Majority, ninety one point seven percent (91.7%) of the respondents had access to credit facilities, 8.3% didn't have access to credit facilities. This implies that majority of the respondents in the study area had access to credit facilities and having access to credit will help in improving their food safety capability such that there can be fund for the purchase of tools that will help in enhancing the safety of the pork being marketed and pork marketers' ability to ensure food safety measures.

Forty three point three percent (43.3%) of the respondents bought their pork from abattoir, 19.2% bought and self-slaughtered, 37.5% of the respondents shared from those that bought in bulk. This implied that below average of the respondents sourced their pork from abattoir. Buying pork from abattoir could at least ensure the pork safety as measures are in place in the abattoir to make sure that animal that undergoes slaughtering are safe for public consumption.

Food safety measure of pork

The result in table 2 revealed that forty eight point three percent (48.3%) of the respondents ate and drank at their work place, 40.0% of the respondent drank water at their work place, while 11.7% of the respondents never eat at their place of work. This implied that a little below average of the respondent always eat and drink at their place of work. Eating at the pork processing area can cause flies to contaminate the food they are eating.

The result also showed that 56.7% of the respondents never smoked in the pork processing area, 28.3% rarely smoked while 15.0% of the respondents always smoked in the pork processing area. This implied that well over average of the respondents never smoked in the pork processing area which can ensure food safety with little or no contamination by the cigarette or the smoke coming from it. The table also showed that 54.2% rarely wash their hand before wearing gloves, 35.0% of the x

respondents always washed their hand before wearing gloves, while 10.8% of the respondents never wash their hand before wearing gloves. With many of the respondents not washing their hands before wearing gloves, there could be contamination of the gloves which will invariably contaminate the pork being marketed.

Also, forty-seven point five (47.5%) of the respondents rarely wore apron before selling pork, 32.5% of the respondent always wore apron before selling their pork, while 20.0% of the respondent never wore apron before selling their pork. This implies that only some of the respondents wore apron before selling pork. Wearing apron can help with the food safety as it helps in preventing contaminants from getting into a food handlers clothing which can in turn contaminate the pork.

Sixty point eight (60.8%) rarely wore a hair cover during work, 20.0% of the respondent always wore a hair cover during work, while 19.2% of the respondent never wore a hair cover. This is an indication that most of the respondents in the study area rarely wore hair cover. Wearing hair cover is a good safety culture and not wearing it by most of the respondents can lead to hair getting into the pork being sold causing irritation and food borne diseases.

Fifty point eight (50.8%) of the respondent rarely handled pork meat when injured or bruised, (27.5%) of the respondents handled pork when injured or bruised, while 21.7% of the respondents never handled pork meat when injured or bruised. This is an indication that an average of the respondents rarely handled pork meat when injured or bruised which is a good safety measure as the wound of the food handler will be safe from being contaminated the pork as well will be safe from being contaminated by the wound.

Fifty-seven point five (57.5%) of the respondents always washed their hands after taking a break and before returning to work, 31.7% rarely wash their hand after taking a break and before returning to work while 10.8% of the respondent never wash their hand after taking a break and before returning to work. This indicates that most of the respondents always washed their hands after taking a break and before returning to work which is a good safety measure that can enhance the safety of the pork being marketed. Sixty two point five (62.5%) of the respondents rarely washed their hand after touching raw meat, 20.8% of the respondent always washed their hand after touching raw meat, while 16.7% never washed their hand after touching raw meat, this is an indication that most of the respondents in the study area practiced the act of washing their hands which can enhance the safety of the pork being marketed.

The result further showed that fifty five percent (55.0%) of the respondents rarely removed their work equipment when using the toilet, 26.7% of the respondent never remove their work equipment when using the toilet while 18.3% of the respondent always removed their work equipment. This indicates that only a few of the respondents always removed their work equipment when using the toilet. The pork handler not removing their work equipment when using the toilet can lead to contamination of the pork being marketed and can lead to food borne diseases of the consumers.

Eighty-one-point seven percent (81.7%) of the respondent rarely cleaned the meat storage area before storing new products, 11.7% of the respondent always cleaned the meat storage area before storing new product, while 6.7% of the respondent never cleaned the meat storage area before storing new product. This implied that majority of the respondents rarely cleaned the meat storage area before storing new products which can increasingly lead to contamination of the pork and hence food borne diseases.

Seventy-four point two (74.2%) of the respondent rarely handled pork meat when they were ill, while 15.8% never handled pork meat when they are ill. It implied that majority of the respondents rarely handled pork when they were ill and this could help in preserving food safety as there will be little or not contamination of the pork by the food handler.

Constraints to use of safety measure among pork marketers

Table 4.4 showed that chemical safety challenges (mean=1.59), transportation cost (maen=1.937) and spoilage (mean=1.27) which were ranked first, second and third respectively

were the very severe constraints faced by respondents in their use of food safety measures in the study area while personal hygiene (0.51) and environmental hygiene (0.88) were the least severe constraints faced by respondents in the study area and were ranked tenth and eleventh. This is an indication that majority of the respondents were faced with chemical safety challenges, transportation cost and spoilage as very severe constraints preventing their use of safety measures in pork marketing. The severe constraints can effectively hinder the use of safety measures among respondents and as a result lead to contamination and food borne diseases among the consumers which can invariably lead to epidemy or loss of lives.

Analysis showing food safety measures among pork marketers

The result revealed that there is no significant relationship between the underlisted socio-economic characteristic of the respondent: sex (x^2 = 0.555), marital status (x^2 = 0.202), educational status (x^2 = 0.404), membership of community groups (x^2= 0.785), access to credit facilities (x^2 = 0.772), sources of credit (x^2 = 0.321) and food safety measures among pork marketers while there was significant relationship between buying of pork for marketing (x^2 = 0.029) and the food safety measures among pork marketers.

Pearson Product Movement Correlation (PPMC)

The table 5 revealed the PPMC result on the respondents level of safety and their personal characteristics such as age ($r = 0.504$, $p<0.05$) Household size is ($r=0.271$, $p>0.05$), year of experience ($r=0.173$, $p>0.05$), safety score ($r=0.673$, $p<0.05$) and are statistically not significant while the constraints score ($r=0$, $p>0.01$) are statistically significant. This implied that there was no significant relationship between the respondents personal characteristic and their level of safety.

CONCLUSION AND RECOMMENDATIONS

Pork marketers in Ibadan north local government have high food safety knowledge and practices and majority of the pork marketers were faced with chemical safety challenges, transportation cost and spoilage as very severe constraints preventing their use of safety measures in pork marketing. Based on the findings of the study, its therefore recommended that:

1. Pork marketers association and government can work hand in hand to educate pork marketers on the hazards of chemical handling and chemical safety measures.
2. Pork marketers staying at proximity can work together as a group and make provision for joint transportation of their meat products to their various destinations
3. Pork marketers working at proximity can come together as a group to purchase joint storage facilities in other to enjoy economies of scale and invariably reduce meat spoilage.

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Table 4.1 socio-economic characteristics of the respondents

Variable	Frequency	Percentage	mean
Sex			
Male	34	(28.3)	
Female	86	71.7	
Age			
21-30	3	2.5	
31-40	15	12.5	
41-50	78	63.3	42
51-60	18	16.7	
>60	6	5.0	
Marital status			
Single	4	3.3	
Married	95	79.2	
Widowed	12	10.0	
Divorced	9	7.5	
Religion			
Christianity	109	90.8	
Islam	7	5.3	
Traditional	4	3.3	
Household size			
1-3	6	5.0	
4-6	69	57.7	5
7-9	45	37.5	
Education status			
No formal	6	5.0	
Primary	14	11.7	
Secondary	60	50.0	
Tertiary	32	26.7	
Adult	8	6.7	
Member of community group			
Yes	80	66.7	
No	40	33.3	
Years of experience			
Less or equal 5	43	35.8	
6-10	57	47.5	7
11-15	14	11.7	
16-20	4	3.3	
>25	2	1.7	
Do you have access to credit facilities			
Yes	110	91.7	
No	10	8.3	
Pork for marketing			
Abattior	52	43.3	
Self slaughtering	23	19.2	
Share from those that buy in bulk	45	37.5	

Source: field survey, 2022

Food safety measure of pork

Statement	Always	Rarely	Never
Do you eat or drink at your work place	48(40.0)	58(48.3)	14(11.7)
Do you smoke inside pork processing area	18(15.0)	34(28.3)	68(56.7)
Do you wear gloves during work	55(45.8)	57(47.5)	8(6.7)
Do you wash hand before using gloves	42(35.0)	65(54.2)	13(10.8)
Do you wear an apron during work	39(32.5)	57(47.5)	24(20.0)
Do you wear hair cover during work	24(20.0)	73(60.8)	23(19.2)
Do you handle pork when you have cuts, Wounds, and bruises o your head	33(27.5)	61(50.8)	26(21.7)
Do you wash your hand after taking break	69(57.5)	38(31.7)	13(10.8)
Do you wash hand after you touch raw meat	25(20.8)	75(62.5)	20(16.7)
Do you remove your work equipment when using the toilet	22(18.3)	66(55.0)	32(26.7)
Do you properly clean the meat storage area before storing new product	14(11.7)	98(81.7)	8(6.7)
Do you handle pork when ill	12(10.0)	89(74.2)	19(15.8)

Source, Field Survey 2022
All figure in parenthesis are in percentage.

Constraints to use of safety measure among pork marketers

Constraints	Severe	Mild	Not constraint	M	Ran
Shortage of water	10(8.3)	109(90.8)	1(0.8)	1.08	8
Skilled vetenarians on pig disease	15(12.5)	104(86.7)	1(0.8)	1.12	6
lack of formal training	16(13.3)	99(82.5)	5(4.2)	1.09	7
poor preventive health	22(18.3)	94(78.3)	4(3.3)	1.15	5
poor storage facilities	29(24.2)	83(69.2)	8(6.7)	1.18	4
personal hygiene	4(3.3)	53(44.2)	63(52.5)	0.51	10
environmental hygiene	31(25.8)	44(36.7)	45(37.5)	0.88	11
Food legislation and regulatory aspect	15(12.5)	96(80.0)	9(7.5)	1.05	9
Chemical safety challenges	74(61.7)	43(35.8)	3(2.5)	1.59	1
Transportation cost	45(37.5)	74(61.7)	1(0.8)	1.37	2
Spoilage	33(27.5)	86(71.7)	1(0.8)	1.27	3

Source, field survey, 2021
All figures in parenthesis are in percentage

Analysis showing the relationship between some selected socio-economic characteristic.

Variables	x^2	df	t-value	decision
Sex	0.349	1	0.555	NS
Marital status	4.615	3	0.202	NS
Education status	4.013	4	0.404	NS
Member of community	0.074	1	0.785	NS
Access to credit facilities	0.084	1	0.772	NS
Buying of pork for marketing	7.051	2	0.029	S
Sources of credit	3.497	3	0.321	NS

Source, field survey 2022, NS. Not significant $p< 0.005$, S. Significant $p>0.005$

Pearson Product Movement Correlation (PPMC) showing the relationship between some selected pork marketers personal characteristics and their level of safety

Variables	R-value	P-value	Decision
Age	0.504	0.062	NS
Household size	0.271	0.101	NS
Year of experience	0.173	0.125	NS
Constraints scores	0.673	0.039	S

NS: Not significant at 4% probability level, S; significant at 1% probability level