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Original Research Article

Preventive Practices of Infectious Disease Control and Its Socio-Demographic Determinants among Urban Market Attendees in Imo State, Nigeria

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ABSTRACT

Background: The market place occupies an important socio-cultural and economic position in the lives of Nigerians. It attracts a diverse group of people with varying levels of preventive practices towards infectious disease control thereby increasing the risk and transmission of infectious diseases.
Objective: To determine the knowledge, attitude, preventive practices and sociodemographic determinants of infectious disease control preventive practices among market participants in Owerri, Imo State. Nigeria.
Methods: The study design was a cross sectional descriptive type using and the participants were selected from two major urban markets in Imo State using the multistage sampling technique. Data was collected using a pretested, semi-structured, interviewer administered questionnaire. Descriptive data was presented as frequency tables and summary statistics. Chi square statistics were computed to determine significant relationships between variables and p-value was set at 0.05 significant levels.
Results: The results revealed that the majority of the respondents had a good/high level of knowledge (66.8%), good/positive attitude (76.2%) and a good/high level of preventive practice (73.6%) towards infectious disease control. About 15-30% of the respondents were of the strong opinion or at least, undecided that infectious disease can be transmitted through charms, evil spirit and nemesis; and also that prayers and traditional homes were better than hospitals in the treatment of infectious disease. Similarly, about 10-23% of the respondents never or rarely avoid direct contact with people, cover nose or mouth when coughing, sleep under insecticide bed nets or regularly attend medical check-up. It was further revealed that there were statistically significant relationships between the level of preventive practices and age ($p<0.0001$), gender ($p<0.01$), occupation ($p<0.0001$), place of residence ($p<0.05$), type of home ($p<0.0001$) and the number of individuals per household ($p<0.0001$).
Conclusion: The proportion of people still without adequate knowledge, positive/good attitude and good/high level of preventive practices poses a threat to the population as they serve as transmission links and therefore increase the opportunities for the transmission of infectious diseases within the markets.

Keywords: Preventive practices, infectious disease, determinants, market, Nigeria.

INTRODUCTION

The market place is an important structural part of the local economy occupying an important socio-cultural and economic position in the lives of Nigerians. [1] It provides an avenue for the convergence

of people considered as market participants which includes sellers, buyers and their children who either accompany their parents or are alone to sell and buy products. [1-3] The adult sellers and their children who could be referred to as market residents, spend a greater part of the day within the market environment interacting among themselves, and with a diverse group of buyers therefore increasing the risk and transmission of infectious diseases either directly or indirectly from one person to another. [1-4]

Infectious diseases are caused by bacteria, virus, fungi or parasites with symptoms and signs varying depending on the organism and host factors which include but not limited to fever, fatigue, pains, vomiting and diarrhoea. Vaccinations, personal hygiene and proper sanitation prevent and protect the individual from most infectious diseases. [5] In Nigeria, the top 4 causes of death in 2012 were infectious diseases ranging from lower respiratory infection, HIV/AIDs, malaria and diarrhoeal diseases. [5] In the market environment, outbreaks of contact or airborne transmitted infectious diseases such as tuberculosis, influenza, meningitis and haemorrhagic fevers (Ebola, Lassa) are potential risks. The recently contained Ebola outbreak in Nigeria and the seasonal outbreaks of endemic Lassa and meningitis in certain parts of the country exemplifies this risk especially in the market place where Lassa fever virus can be transmitted through contact with secretions and also through inhalation of dust infected by the excreta of infected rodents; Ebola virus is transmitted similarly through contact and meningitis and tuberculosis through droplets of respiratory or throat infection. [6-8]

Poor hygiene standards and inadequate living conditions particularly overcrowding, poor ventilation, lack of access to clean water and adequate sanitation which encourages the breeding of disease vectors, leave groups of people more vulnerable to disease. [9] As a consequence, the potential spread of infectious diseases in the market place is threatened by the existing level of knowledge, attitude and practices of infection control measures among the market participants; as low levels of knowledge, attitude and practice is a recipe for the outbreak of diseases. This is compounded by the fact that the market place is where large numbers of people congregates and interact in relatively small areas in the pursuit of livelihoods thereby making the transmission of infection relatively easy. [10]

Coupled with the existing global sanitation problems where an estimated 2.4 billion people still do not have a safe means of dumping their wastes, the market place especially in developing countries is a reflection of these challenges and as such poses an increased risk to the exposure of several infectious diseases. [11]

So, effective infection control in the market place is hinged on proper sanitation and hygienic practices which is usually a product of the individual's perception, attributed to the persons' knowledge and attitudes towards infection preventive actions; and as such strategies targeted to behavioural change is critical to halting the spread of potential infectious diseases in the market environment and the ultimate consequences of disability and death. [7] This is why the study aims at assessing the knowledge, attitude and safety practices of market participants towards infectious disease control.

METHODOLOGY

Study Area

The study was conducted in Owerri municipal and Orlu Local Government Areas (LGAs) in Imo State, South East Nigeria. By the 2006 census, Owerri municipal LGA had a total population of 125,337 (60,882 males and 64,455 females) and occupies an area of 58.5 square kilometres with a population density of about 2,143 persons per square kilometre. Also Orlu LGA had a total population of 142,792 (69,632 males and 73,160 females)

and occupies an area of 132.9 square kilometres with a population density of about 1,074 persons per square kilometre. [12] Both locations are urban with Owerri municipal being the state capital

Study Population/Study design/Selection criteria

The study population comprised, market participants (sellers and buyers) in urban markets in Imo State. The study design was a Cross Sectional Descriptive Study. Inclusion criteria was, any individual above 16 years old involved in selling or buying within the market area and the exclusion criteria was, any individual outside the market environment.

Sample Size Estimation

The minimum sample size was calculated using the Cochrane formula for study populations greater than 10,000 people. [13]

$$n = \frac{Z^2 pq}{d^2}$$

When n= minimum sample size, Z= Standard normal deviate corresponding to 5 % significant level ≈1.96, *p* = proportion in previous related study with good level of tuberculosis preventive practice, (32.2%) (14), *q=1-p, d=* tolerable error of margin set at 0.05. Applying the formula above, the calculated minimum sample size was 334 but due to an anticipated attrition rate of 20%, considering the nature of markets in Nigeria, a total sample size of 500 participants was enrolled in this study.

Sampling Technique

The sampling technique used to select the market participants was a stratified random sampling technique. The first stage involved the purposive selection of two zones from the three zones of the state where the study will be conducted. This was done because of the concentration of big markets in the selected zones The second step involved the selection of one major market from each of the two zones of the state using simple random sampling by balloting thus International market Orlu in Orlu LGA and Ekeonunwa market in Owerri municipal LGA. About 250 participants will be enrolled from each of the selected market from the zones. The third step involved the stratification of each market into the perishable and non-perishable sections. The fourth step involved identifying the North, South, East and West geographical boundaries of each section and ballots were used to randomly select a geographical boundary as the starting point. From each starting point in each section moving in a particular direction in one section and in the opposite direction the other section, the market shops that were open were selected and in each market shop, any buyer or seller identified was selected until 125 participants from each section were enrolled. Any market shop occupant that refused to participate was skipped.

Data Collection and Analysis

Data was collected using a pretested, semi structured, and interviewer administered questionnaire. The questionnaire comprised 4 sections; section one contains the socio-demographic characteristics of participants, section two contains participants' awareness and knowledge of infectious diseases, section three contains participants attitude towards infectious diseases and section four contains preventive practices towards infectious diseases. The level of knowledge of infectious diseases was determined by scoring the questions that assessed knowledge. For a single response question, a correct answer was scored 2; an incorrect answer was scored 0. For a multiple response question, up to 2 correct answers scored 1, 3 to 5 correct answers scored 3 and greater than 5 correct answers scored 5. In assessing the level of attitude, a Likert scale was used. For a positive question, a response from strongly agree to strongly disagree, a score from 5 to 1 was allocated accordingly and for a negative question, a response of 'strongly disagree' to 'strongly agree', a score from 5 to 1 was allocated accordingly. Similarly, the level of preventive practice was scored by allocating a score of 4, 3, 2 and 1 to responses of 'always', 'sometimes', 'rarely' and 'never'

respectively. The aggregate scores for each respondent according to the level of knowledge, attitude and preventive practices were translated to a percentage and assessed against a scale of less than 60% for poor, 60-80% for fair and greater than 80% for good.

Data was cleaned and validated manually and then analysed using Software Package for Social Sciences (SPSS-IBM) version 22. Descriptive statistics (frequency tables and summary indices) were generated. Chi Square was used to test association between categorical variables, while p-value was set at 0.05 significant levels.

Ethical Considerations

Ethical approval was obtained from the Ethics Committee of Imo State University Teaching Hospital Orlu. Verbal consents and entry permission were obtained from the participants and management of the two urban markets.

RESULTS

Five hundred questionnaires were administered but 458 were completely and correctly filled with a response rate of 91.6%.

Sociodemographic Characteristics of Respondents

The mean age of the participants was 31.6±6.7 years old with male to female ratio of 1:1.4 with more than half of the participants belonging to the Catholic Christian denomination, (51.3%), were never married singles (57.9%) and having a tertiary level of education, (62.0%). The majority of the participants were either students or traders (67.7%) residing in urban or semi urban areas, (69.2%). About one third of the participants, (33.8%) live in one bedroom flat with an average number per household of 5.2 ±0.57 individuals. Most of the respondents in their residences use water closet toilet, (91.0%) with water from private boreholes being their main source of drinking water, (70.5%). Table 1

Table 1: Sociodemographic Characteristics

Variable	Category	Frequency (%) n=458
Age (years) Mean age (31.6 ±6.7)	<20	26(5.7)
	21-30	260(56.8)
	31-40	86(18.8)
	>40	86(18.8)
Gender	Female	266(58.1)
	Male	192(41.9)
Religion	Catholic	235(51.3)
	Pentecostal	177(38.6)
	Orthodox	39(8.5)
	Traditional/Islam	7(1.5)
Marital status	Never married	265(57.9)
	Currently Married	167(36.5)
	Previously married	26(5.7)
Educational level	Tertiary	284(62.0)
	Secondary	130(28.4)
	Primary	25(5.5)
	None	19(4.1)
Occupation	Students	156(34.1)
	Traders	154(33.6)
	Civil servants	46(10.0)
	Teacher	28(6.1)
	Others	74(16.2)
Place of residence	Urban	214(46.7)
	Semi Urban	103(22.5)
	Rural	141(30.8)
Type of House	1 bedroom flat	155(33.8)
	2 bedroom flat	89(19.4)
	3 bedroom flat	84(18.3)
	Bungalow	80(17.5)
	Thatch/mud house	50(10.9)
Type of toilet	Water closet	417(91.0)
	Pit latrine	37(8.1)
	Open defecation	4(0.9)
Drinking water source	Private borehole	323(70.5)
	Tanker supply	34(7.4)
	Government supply	31(6.8)
	Stream/Rivers	20(4.4)
	Rain water	50(10.9)
Number per household Mean per household (5.2 ±0.57)	1-4	202(44.1)
	5-8	192(41.9)
	>8	64(14.0)

Knowledge of Infectious diseases of Participants

Most of the participants (96.1%) were aware of infectious diseases and their common sources of information were; television, (72.7%), radio, (64.1%) and friends and relatives, (50.0%). The three most known infectious diseases were Malaria (83.2%), Ebola (74.5%) and Hepatitis (69.5%) and the three least known infectious diseases were Meningitis (31.4%), Lassa fever (30.0%) and Tuberculosis (28.6%). A majority of the participants reported that drinking contaminated water (92.7%), eating contaminated food (80.5%) and living in a dirty environment (78.2%) as the common ways of contacting infectious disease. The common symptoms of infectious disease

known by the participants were cough (84.5%), headache (80.9%), rashes (78.2%) and fever (76.8%). While more than 90% of the participants knew that washing hands before eating and after using the toilet can prevent infectious disease transmission, and about three quarters (74.5%) knew that keeping the surroundings clean can also prevent infectious disease transmission. Most of the participants reported that all infectious diseases can be cured (98.3%) and the cure can be achieved by receiving medical care from the hospitals (91.8%). Similarly, it was reported by 4 to 10% of the respondents that praying in the church and using charms from a native doctor would also result in a cure. Table 2. Furthermore, the majority of the participants (66.8%) had a good level of knowledge of infectious diseases Fig 1.

Table 2: Knowledge of Infectious diseases

Variable	Category	Frequency (%)
Awareness of infectious diseases (n=458)	Yes	440(96.1)
	No	18(3.9)
*Source of information (n=440)	Television	320(72.7)
	Radio	282(64.1)
	Friends/relatives	220(50.0)
	Newspaper	198(45.0)
	School	182(41.4)
	Health worker	172(39.1)
	Market place	142(32.3)
	Chemist/pharmacist	94(21.4)
	Billboard/posters	88(20.0)
Infectious diseases known (n=440)	Malaria	366(83.2)
	Ebola	328(74.5)
	Hepatitis	306(69.5)
	Measles	286(65.0)
	Conjunctivitis	278(63.2)
	Chicken pox	278(63.2)
	HIV/AIDS	262(59.5)
	Pneumonia	254(57.7)
	Typhoid fever	234(53.2)
	Skin infection	204(46.4)
	Yellow fever	168(38.2)
	Worm infestation	144(32.7)
	Meningitis	138(31.4)
	Lassa fever	132(30.0)
	Tuberculosis	126(28.6)
*Symptoms of infectious disease known (n=440)	Cough	372(84.5)
	Headache	356(80.9)
	Rashes	344(78.2)
	Fever	338(76.8)
	Itching	288(65.5)
	Weight loss	286(65.0)
	Vomiting	272(61.8)
*Preventive measures known (n=440)	Watery stooling	234(53.2)
	Chest pain	206(46.8)
	Washing hand before eating	426(96.8)
	Washing hand after toilet use	406(92.3)
	Using insecticide treated nets	360(81.8)
	Washing hand regularly	340(77.3)
	Keeping surroundings clean	328(74.5)
	Regular medical check up	274(62.3)
	Regular antibiotic self medication	108(24.5)
*Ways of contacting infectious diseases (n=440)	Drinking contaminated water	408(92.7)
	Eating contaminated food	354(80.5)
	Living in dirty environment	344(78.2)
	Having contact with sick person	260(59.1)
	Staying too long in hospital	202(45.9)
	Attack from dreams during sleep	38(8.6)
	Provoking the gods	34(7.7)
All infectious diseases can be cured (n=458)	Yes	450(98.3)
	No	8(1.7)
*Ways of curing infectious diseases (n=440)	Medical care from hospitals	404(91.8)
	Self-medication with antibiotics	116(26.4)
	Use of herbs	90(20.5)
	Prayers in churches	42(9.5)
	Spontaneous healing	20(4.5)
	Charms from native doctor	18(4.1)
***Multiple responses**		

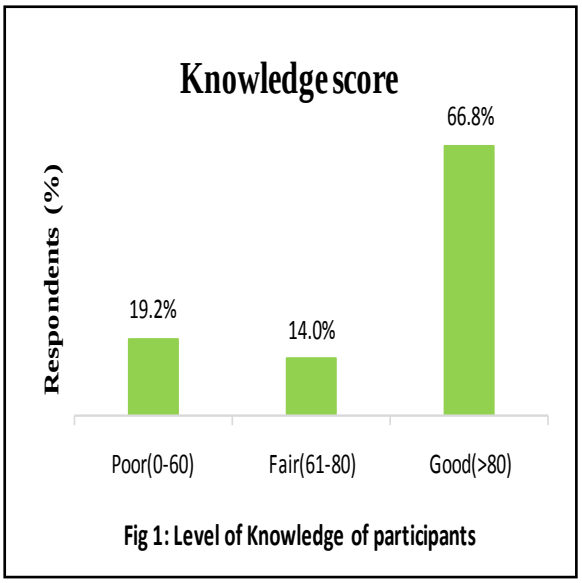

Fig 1: Level of Knowledge of participants

Attitude of Participants towards Infectious diseases

A majority of the participants strongly agreed that infectious diseases are caused by germs (62.0%) and can affect any age group (66.2%), be transmitted (72.7%), prevented (72.5%), controlled by keeping clean surroundings (53.5%) and curable (61.4%). Only close to half of the participants strongly disagreed that infectious disease can be transmitted through charms (54.1%), evil spirit and nemesis (46.1%), with regular hand washing playing no role in transmission of infectious disease(45.8%), prayer and traditional homes being better than hospitals in treatment (52.8%) and keeping the information secret if family member contacts infectious disease (50.6%). Similarly, only close to one third of the participants strongly disagreed that self-medication with antibiotics is enough for treatment (38.4%) and that the community plays no role in the prevention of infectious disease (39.1%). Table 3

Furthermore, the majority of the participants (76.2%) had a good level of positive attitude towards infectious diseases prevention. Fig 2

Preventive Practices of Participants towards infectious diseases Control

About half of the participants reported always using hand cleanser after every hand shake (48.5%),with the majority of participants always covering mouth and nose when coughing (68.8%) and always washing hands with soap after every daily outing (74.0%), after toilet use (81.4%) and after market activities (67.5%). Also a majority of participants always took a bath before and after market activities (60.7%), washed handkerchief every day (61.8%) and washed clothes regularly after market activities (56.1%). Though, more than three quarters of the participants' always clean house/market shops (81.2%) and remove market/ household waste (82.3%) regularly, only two thirds of the participants' always clean gutters and clear bushes around their house/market shop (66.2%) with half of the participants sleeping under insecticide treated bed nets (50.0%). Similarly, more than half of the participants always educate their neighbours on personal hygiene (62.0%), always attend medical check- up regularly (58.7%) and always visit the hospital when sick (59.8%). Table 4

Generally, majority of the participants (73.6%) had a good level of preventive practice towards infectious diseases control. Fig 3

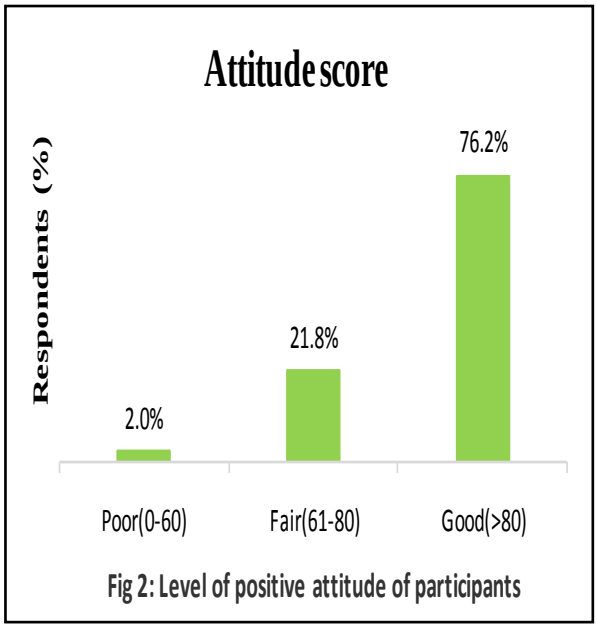

Fig 2: Level of positive attitude of participants

Table 3: Attitude of participants towards Infectious diseases

	Strongly Agree (%)	Agree (%)	Undecided (%)	Disagree (%)	Strongly Disagree (%)	Total (%)
Infectious diseases are caused by germs	284(62.0)	143(31.2)	17(3.7)	12(2.8)	2(0.4)	458(100)
Infectious disease can affect any age group	303(66.2)	119(26.0)	20(4.4)	10(2.2)	6(1.3)	458(100)
Infectious diseases are curable	281(61.4)	161(35.2)	13(2.8)	1(0.2)	2(0.4)	458(100)
Infectious disease can be prevented	332(72.5)	120(26.2)	2(0.4)	0(0)	4(0.9)	458(100)
Infectious disease can be transmitted	333(72.7)	115(25.1)	5(1.1)	3(0.7)	2(0.4)	458(100)
Infectious disease can be transmitted through charms	15(3.3)	25(5.5)	39(8.5)	131(28.6)	248(54.1)	458(100)
Evil spirit and nemesis are vital to infectious disease transmission	38(8.3)	40(8.7)	54(11.8)	115(25.1)	211(46.1)	458(100)
Regular hand washing plays no role in infectious disease transmission	27(5.9)	39(8.5)	31(6.8)	151(33.0)	210(45.8)	458(100)
Community plays no role in prevention of infectious disease	29(6.3)	35(7.6)	26(5.7)	189(41.3)	179(39.1)	458(100)
Keeping clean surroundings help in infection control	245(53.5)	153(33.4)	36(7.9)	19(4.4)	5(1.1)	458(100)
See doctor when one has infectious disease	343(74.9)	108(23.6)	4(0.9)	2(0.4)	1(0.2)	458(100)
Prayer and traditional homes are better than hospitals in treatment	8(1.7)	25(5.5)	38(8.3)	145(31.7)	242(52.8)	458(100)
Self-medication with antibiotics is enough for treatment	15(3.3)	40(8.7)	55(12.0)	172(37.6)	176(38.4)	458(100)
Keep information secret if family member contacts infectious disease	15(3.3)	26(5.7)	29(6.3)	156((34.1)	232(50.6)	458(100)

Table 4: Preventive Practices of participants towards Infectious diseases

	Always (%)	Sometimes (%)	Rarely (%)	Never (%)	Total (%)
Wash hands with soap after going out daily	339(74.0)	112(24.5)	6(1.3)	1(0.2)	458(100)
Wash hands with soap after toilet use	373(81.4)	69(15.1)	15(3.3)	1(0.2)	458(100)
Wash hands with soap after market activities	309(67.5)	120(26.2)	26(5.7)	3(0.7)	458(100)
Use hand cleanser after every hand shake	222(48.5)	108(23.6)	81(17.6)	47(10.3)	458(100)
Take bath before and after market activities	278(60.7)	135(29.5)	43(9.4)	2(0.4)	458(100)
Avoid direct contact with people	196(42.8)	155(33.8)	74(16.2)	33(7.2)	458(100)
Cover nose/mouth when coughing	315(68.8)	99(21.6)	20(4.4)	24(5.2)	458(100)
Regular washing of clothes after market activities	257(56.1)	152(33.2)	48(10.5)	1(0.2)	458(100)
Wash handkerchief every day or use new ones	283(61.8)	120(26.2)	48(10.5)	7(1.5)	458(100)
Regular cleaning of house/market stall	372(81.2)	76(16.6)	8(1.7)	2(0.4)	458(100)
Regular removal of market/ household waste	77(82.3)	71(15.5)	8(1.7)	2(0.4)	458(100)
Clean gutters and clear bushes around house/market stall	303(66.2)	135(29.5)	18(3.9)	2(0.4)	458(100)
Regular medical check up	269(58.7)	104(22.7)	72(15.7)	13(2.8)	458(100)
Go to hospital when sick	274(59.8)	164(35.8)	19(4.2)	1(0.2)	458(100)
Sleep under insecticide bed nets	229(50.0)	125(27.3)	67(14.6)	37(8.1)	458(100)
Educate neighbours on personal hygiene	284(62.0)	137(29.9)	31(6.8)	6(1.3)	458(100)

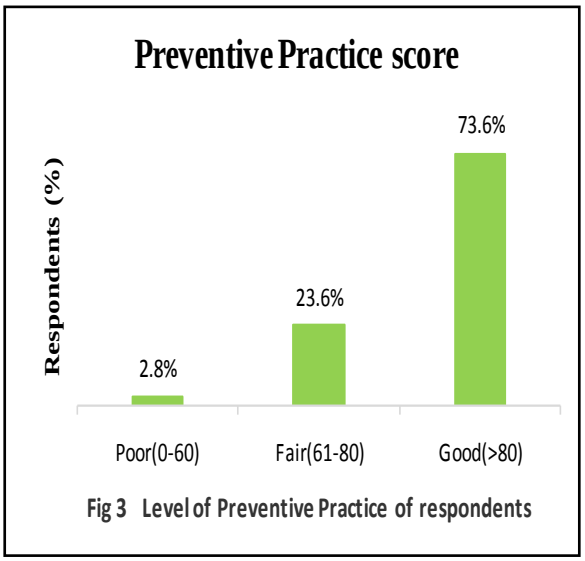

Fig 3 Level of Preventive Practice of respondents

Socio-demographic factors associated with level of Preventive Practices of Participants

The following socio-demographic factors were significantly associated with the level of preventive practices of participants; Age ($p<0.0001$), Gender ($p=0.002$), Occupation ($p<0.0001$), Place of residence ($p=0.024$), Type of home ($p<0.0001$) and number per household ($p<0.0001$). While on the other hand; Religion, Marital status, Educational level and Type of household toilet were not significantly associated practice of preventive measures, ($p>0.05$). Table 5.

Table 5: Socio demographic factors associated with the level of Preventive Practices

Variable	Poor (%) Practice	Fair (%) Practice	Good (%) Practice	Total (%)	χ^2	df	p-value
Age (yrs)							
<20	0(0.0)	3(11.5)	23(88.5)	26(100)	**48.57a**	**6**	**0.000***
21-30	0(0.0)	58(22.3)	202(77.7)	260(100)			
31-40	2(2.3)	16(18.6)	68(79.1)	86(100)			
>40	11(12.8)	31(36.0)	44(51.2)	86(100)			
Total	**13(2.8)**	**108(23.6)**	**337(73.6)**	**458(100)**			
Gender							
Male	0(0.0)	54(28.1)	138(71.9)	192(100)	**12.41**	**2**	**0.002***
Female	13(4.9)	54(20.3)	199(74.8)	266(100)			
Total	**13(2.8)**	**108(23.6)**	**337(73.6)**	**458(100)**			
Religion							
Catholic	6(2.6)	58(24.7)	171(72.8)	235(100)	**3.50a**	**6**	**0.744**
Pentecostal	4(2.3)	39(22.0)	134(75.7)	177(100)			
Orthodox	3(7.7)	9(23.1)	27(69.2)	39(100)			
Others	0(0.0)	2(28.6)	5(71.4)	7(100)			
Total	**13(2.8)**	**108(23.6)**	**337(73.6)**	**458(100)**			
Marital status							
Single	10(3.8)	67(25.3)	188(70.9)	265(100)	**5.06a**	**4**	**0.281**
Married	3(1.8)	37(22.2)	127(76.0)	167(100)			
Others	0(0.0)	4(15.4)	22(84.6)	26(100)			
Total	**13(2.8)**	**108(23.6)**	**337(73.6)**	**458(100)**			
Educational level							
Primary	0(0.0)	6(24.0)	19(76.0)	25(100)	**7.89a**	**6**	**0.246**
Secondary	2(1.5)	40(30.8)	88(67.7)	130(100)			
Tertiary	10(3.5)	58(20.4)	216(76.1)	284(100)			
None	1(5.3)	4(21.1)	14(73.7)	19(100)			
Total	**13(2.8)**	**108(23.6)**	**337(73.6)**	**458(100)**			
Occupation							
Students	0(0.0)	33(21.2)	123(78.8)	156(100)	**30.76a**	**8**	**0.000***
Traders	6(3.9)	39(25.3)	109(70.8)	154(100)			
Civil servants	0(0.0)	9(19.6)	37(80.4)	46(100)			
Teacher	0(0.0)	3(10.7)	25(89.3)	28(100)			
Others	7(9.5)	24(32.4)	43(58.1)	74(100)			
Total	**13(2.8)**	**108(23.6)**	**337(73.6)**	**458(100)**			
Place of Residence							
Urban	8(3.7)	47(22.0)	159(74.3)	214(100)	**11.20a**	**4**	**0.024***
Semi Urban	0(0.0)	33(32.0)	70(68.0)	103(100)			
Rural	5(3.5)	28(19.9)	108(76.6)	141(100)			
Total	**13(2.8)**	**108(23.6)**	**337(73.6)**	**458(100)**			
Type of House							
1 bedroom flat	3(1.9)	45(29.0)	107(69.0)	155(100)	**35.42a**	**8**	**0.000***
2 bedroom flat	1(1.1)	19(21.3)	69(77.5)	89(100)			
3 bedroom flat	0(0.0)	21(25.0)	63(75.0)	84(100)			
Bungalow	0(0.0)	14(17.5)	66(82.5)	80(100)			
Others	9(18.0)	9(18.0)	32(64.0)	50(100)			
Total	**13(2.8)**	**108(23.6)**	**337(73.6)**	**458(100)**			
Type of household toilet							
Water closet	13(3.1)	95(22.8)	309(74.1)	417(100)	**7.01a**	**4**	**0.135**
Pit latrine	0(0.0)	13(35.1)	24(64.9)	37(100)			
Open defecation	0(0.0)	0(0.0)	4(100)	4(100)			
Total	**13(2.8)**	**108(23.6)**	**337(73.6)**	**458(100)**			
Number per household							
1-4	1(0.5)	46(22.8)	155(76.7)	202(100)	**26.66**	**4**	**0.000***
5-8	4(2.1)	49(25.5)	139(72.4)	192(100)			
>8	8(12.5)	13(20.3)	43(67.2)	64(100)			
Total	**13(2.8)**	**108(23.6)**	**337(73.6)**	**458(100)**			

*significant a-likelihood ratios

DISCUSSION

This study assessed the knowledge, attitude, preventive practices and sociodemographic determinants of infectious disease control among market buyers and sellers and it revealed that the majority of the respondents had a good level of knowledge, positive attitude and preventive practices towards infectious disease control. It further revealed that age, gender, occupation, place of residence, type of home and the numbers of individuals per household were significantly associated

with the level of preventive practice of infectious disease control.

The sociodemographic distribution of the respondents with respect to gender was similar to previous public market studies done in Nigeria [1,2] which showed that, even though men are increasingly participating in public market activities, women still predominate in its operations and participation. This probably is due to the fact that culturally, such activities are still seen as traditional roles for women in our environment. On the contrary, the level of education of the respondents in the present study did not show a similar pattern with the previous studies, as the majority had tertiary levels of education. This also could be explained by the distribution of the respondents in the present study that showed that a majority were students, civil servants and teachers with the inclusion of traders who resided mainly in urban and semi urban areas. This observation is not unusual, as the study population involved market participants i.e. sellers and buyers whose characteristics probably reflect the urban nature of the market location and the realities of the economic and employment difficulties in the country; which has also resulted in more educated people irrespective of gender making a living through public market activities.

The spread of infectious disease is facilitated by overcrowding, poor access to clean drinking water and lack of improved household and environmental sanitation facilities amongst other factors. [9] These factors were not wholly observed in the present study, even though the majority lived in one bedroom flat and the average number of individuals per household was 5.2±0.6, the majority of respondents got their drinking water from improved sources such as private boreholes and Government supply with more than 90% of the respondents using water closet type toilet facilities. This observation in the present study with respect to the average number of individuals per household and sources of drinking water for the majority of the respondents was similarly reported among the Nigerian population in the National Demographic and Health Survey, 2013 report, [15] though on the contrary, the report also observed that less than 50% of the population had access to improved sanitation facilities such as the water closet type toilets.

Though in the present study, most of the respondents were aware of the existence of infectious diseases, the least known of the infectious diseases were Meningitis, Lassa fever and Tuberculosis; which unfortunately are the most likely to have the greatest impact in public places like the markets. A Nigerian study by Ilesanmi et al, [16] observed a low awareness of Lassa fever among a community of mainly traders though they also observed that the awareness of Lassa fever was more evident among those who had tertiary level of education. It is not surprising in the present study that Malaria and Ebola were the most known by the respondents, as Malaria is endemic, ubiquitous and most commonly treated; and the high awareness of Ebola due the recent outbreak in Nigeria that was characterised by fear of high transmissibility, no cure and rapid death fuelled by effective mass media communication such as television, radio, short messaging system (SMS) and other social networking platforms. This was collaborated in a recent Nigeria study that observed that 92.5% of the respondents were aware of Ebola and their main source of information was the radio. [17] Similarly, in the present study, television, radio, friends and relatives were the main sources of information about infectious diseases for a majority of the respondents. This observation was also observed in other KAP studies on infectious diseases that reported radio and television as main sources of information dissemination. [14,18]

In spite of the fact that in the present study, it was reported that the aggregate knowledge, positive attitude and level of preventive practices for a majority of the respondents were good, gaps in the

knowledge, attitude and practice that increase the potential risks of infectious disease transmission can still be observed. These gaps exist from the fact that a relatively large proportion of respondents exhibit incorrect or inadequate knowledge, attitude and practice on critical aspects that can promote the spread of infectious disease, for example; where up to one quarter of the respondents report that regular self- medication with antibiotics are known preventive and curative measures; and that they strongly agree or are undecided as to the opinion that self -medication with antibiotics is enough. This encourages the practice of self-medication with antibiotics which promotes the emergence of resistant strains and hence facilitates transmission.

Gapsare seen to also exist where up to 5 to 30% of the respondents report that attack from dreams and provocation of the gods are ways of contacting infectious disease and that, they strongly agree or are undecided as to the belief that infectious disease can be transmitted through charms, evil spirits and nemesis with better treatments and cure received from churches, traditional homes and native doctors. Similarly, Shittu et al., [17] observed that up to about 20% of the respondents in their study done in Nigeria, believed that traditional and spiritual healers could treat Ebola successfully. These beliefs stem from the culture and way of life of the people and as such, encourage the persistence and transmissibility of infectious disease between hosts with the consequence of disability and death.

Furthermore, gaps can also be observed where up to 20% of the respondents strongly agree or are undecided as to the opinion that regular hand washing and the Community plays no role in the prevention and transmission of infectious disease coupled with the observations that up to 20 to 50% of the respondents sometimes, rarely or never wash hands regularly with soap after toilet use, market activities or daily outings; or cover mouth when coughing, clean gutters and clear bushes around the house or market stall or educate neighbours on personal hygiene or sleep under insecticide treated bed nets. With respect to the Nigerian study on Ebola by Shittu et al., it was observed that up to 25 to 39% of the respondents did not practice or even believe that regular and thorough hand washing and also adequate environmental and personal hygiene could prevent infectious diseases. Poor market sanitation and hygiene practices remain a serious challenge in our environment, providing opportunities for the increased risk and spread of diseases. [1] Studies by Iwu et al., [1] and Diwe et al., [19] respectively, observed that open dumping is the main disposal methods in the markets and that waste is indiscriminately disposed by all, among the timber market traders. Also with respect to another Nigeria study on Pulmonary Tuberculosis by Duru et al., [14] it was observed that up to 36 to 78% of the respondents only sometimes, rarely or never cover mouth in public places when coughing; and neither does their community get involved in the prevention of infectious disease. These varying levels of preventive practices observed from a relatively large proportion of the respondents, further provide high risk opportunities for the transmission of infectious diseases in our environment.

The present study further revealed on one hand, that age, gender, occupation, place of residence, type of home and the number of individuals per household were significantly associated with the level of preventive practice of infectious disease control and on the other hand was not significantly associated with religion, marital status and level of education.

These observations in present study with respect to age, gender, occupation and level of education were consistent with the study done by Duru et al., [14] but also inconsistent with respect to religion and marital status. This probably further emphasizes the role that sociodemographic factors play in influencing the level of preventive practices towards infectious

disease control and therefore must be taken into cognisance when designing appropriate strategies targeted at improving the level of preventive practices.

CONCLUSION

Despite the good level of knowledge, attitude and preventive practices of infectious disease control observed among the market participants in the present study, the proportion of people still without adequate knowledge, positive attitude and good level of preventive practices poses a threat to the population as they serve as transmission links and therefore increase the opportunities for the transmission of infectious diseases within the markets and by extension the communities. So, effective communication strategies should be targeted at reducing this proportion of people with the intent of breaking these transmission links by improving their knowledge, reducing misconceptions and consequently imbibing positive attitudes which will translate to preventive practices in the control of the spread of infectious diseases especially in public places.

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REFERENCES

1. Iwu A C, Duru C B, Uwakwe K A, Diwe K C, Merenu I A et al. Assessment of waste management practices among traders in major markets in Owerri, Imo state, Nigeria. Int J Health Sci Res. 2016; 6(7):7-17.
2. Abejegah C., Abah S.O., Awunor N.S., Duru C.B., Eluromma E., Aigbiremolen A.O et al. Market Sanitation: A Case Study of Oregbeni Market Benin City Edo State, Nigeria. International Journal of Basic, Applied and Innovative Research. 2013; 2(2): 25-31.
3. Efe S I. Waste Disposal Problems and Management in Ughelli, Nigeria. Journal of Environmental Protection. 2013; 4: 4-11.
4. World Health Organization (WHO) 2016. Infectious diseases. Online at http://www.who.int/topics/infectious_diseases/en/
5. World Health Organization (WHO). Nigeria: WHO 2012 statistical profile. Online at http://www.who.int/gho/countries/nga.pdf?ua=1
6. World Health Organization (WHO). Lassa fever fact sheet 2016. Online at http://www.who.int/mediacentre/factsheets/fs179/en/
7. World Health Organization (WHO). Meningococcal meningitis Fact sheet 2015. Online at http://www.who.int/mediacentre/factsheets/fs141/en/
8. World Health Organization (WHO). Tuberculosis Fact sheet 2016. Online at http://www.who.int/mediacentre/factsheets/fs104/en/
9. Jim O' Neil et al. Infection prevention, control and surveillance: Limiting the development and spread of drug resistance. Review on antimicrobial resistance March 2016. Online at http://amr-review.org/ sites/default/ files / Health %20 infrastructure % 20and% 20 surveillance % 20final%20version_ LR _ NO%20CROPS.pdf
10. Shafiul, A.A. and Mansoor, A. Partnerships for solid waste management in developing Countries. Journal of Health Education. 2003; 3 (Special issue):180‑193.
11. UNICEF/WHO joint report. Progress on Sanitation and Drinking Water: 2015 Update and MDG Assessment. UNICEF 2015. Online at http://www.unicef.org/publications/ index_ 82419.html.
12. National Population Commission. Federal Republic of Nigeria 2006 Population and Housing Census: Priority table volume III. Online at http://www.population.gov.ng/images/Vol%2003%20Table%20DSx%20LGAPop%20by%20SDistrict-PDF.pdf.

13. Cochran WG. Sampling technique. 2nd ed. New York: John Wiley and sons Inc. 1963.
14. Duru CB, Iwu AC, Uwakwe KA et al. Pulmonary tuberculosis preventive practices and its determinants among residents in communities in Orlu, Imo State, Nigeria. International Journal of Science & Healthcare Research. 2016; 1(2): 57-69.
15. National Population Commission (NPC) [Nigeria] and ICF International. 2014. Nigeria Demographic and Health Survey 2013. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International.
16. Ilesanmi O S, Omotoso B, Alele F O, Adewuyi P. Awareness of Lassa Fever in a Rural Community in South West Nigeria. Journal of Community Health Research. 2015; 4(1):1-10.
17. Shittu RO, Sanni MA, Odeigah LO, Akanbi AA, Sule AG et al. Awareness, Knowledge and Misconceptions about Ebola Virus Disease (EVD) in a Family Practice Setting in Nigeria, West Africa. J Antivir Antiretrovir. 2015; 7:010-014.
18. Esmael A, Ali I, Agonafir M, Desale A, Yaregal Z, Desta K. Assessment of Patients' Knowledge, Attitude, and Practice Regarding Pulmonary Tuberculosis in Eastern Amhara Regional State, Ethiopia: Cross-Sectional Study Am J Trop Med Hyg. 2013; 88(4): 785-788.
19. Diwe, K.C., Duru, C.B., Iwu, A.C., Merenu, I.A., Uwakwe, K.A., Oluoha, U.R., Ogunniyan, T.B., Madubueze, U.C. and Ohale, I. Occupational Hazards, Safety and Hygienic Practices among Timber Workers in a South Eastern State, Nigeria. Occupational Diseases and Environmental Medicine. 2016; 4: 63-71.

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