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Research Paper

Knowledge, Beliefs and Practices of Food Vendors To Prevent Water-Borne Infections in Ikenne Local Government Area, Ogun State

GBOLAGUNTE O. A., OLANREWAJU,F. O.(PhD) & ATULOMAH N.O(PhD)
Department of Public Health, School of Public and Allied Health, Babcock University, Ilishan-Remo, Ogun State, Nigeria.

ABSTRACT
The most important reasons for morbidity and death rates resulting from inadequate water sanitation in Nigeria is individual predispositions defined by poor knowledge of what constitute proper water sanitation, inadequate perception of consequences, attitudinal dispositions and health depleting behaviours.
The study adopted a cross-sectional survey design method. One hundred and fifty-five (155) food vendors were sampled in Ikenne Local Government. A validated questionnaire which was interviewer-administered was used for data collection. Data entry and analysis was done using SPSS version 26.
The results showed that 14 (9.0%) had low knowledge on water borne diseases, 67.1% had moderate knowledge and 23.9% of the respondents having a high knowledge. Also, 74.2%, of the respondents believed that water borne infections cannot spread from one person to another. Majority 76.1% of the respondents had low sanitation practice. More so, Majority 74.8% of the respondents had high preventive measure against water borne infections. There is significant relationship between respondents' knowledge and prevention measures (r=0.45; p=0.00). There is significant relationship between respondents' knowledge and practice (r=0.22; p=0.000). Furthermore, the result of the linear regression showed that knowledge contributes 5% to the respondent's practice on water-borne infection (R=0.24; R^2=0.05; p-0.00).
The study therefore recommended that awareness and educational programs by public health workers needs to continuously run on all media platforms to dispel some of the target population's beliefs and increase their practice on prevention of water borne disease.

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I. INTRODUCTION

Water is an important resource used by food vendors for different purposes, especially preparing ingredients and washing utensils for cooking. Food vendors are people who sell food to meet the needs of others in the community and to earn a living for themselves. When water, is not handled with safety measures by food vendors, especially those in rural areas during use and storing, it constitutes health risk to individuals who patronize their products (Ilboudu, & Traore, 2006). In the preparation of food, water is used for cooking, washing, drinking, and cleaning purposes (Bhagwat, 2019). However, lack of adequate water sanitation is a critical problem in most rural communities globally, especially in low-and middle-income countries including Nigeria that contribute to the reasons why most food vendors do not practice water sanitation (Quathara, & Traore, 2006). Contamination from microorganisms on utensils and food items may cause gastrointestinal morbidity and mortality in at-risk populations emerging from exposure to water-borne infections caused by the transmission of pathogenic micro-organisms present in unhygienic water.

Knowledge, beliefs and practices are antecedent factors contributing significantly to behaviour related to using poor water quality that causes water-borne infections (Campbell, 2011). There are many diseases and clinical symptoms associated with water-borne infections and include; diarrhoea, cholera, typhoid and vomiting. These diseases are generally spread during the process of food-handling or cleaning of cooking utensils with contaminated water, drinking of contaminated water, or by ingesting food that has been prepared with poor water quality.

Water-borne infection outbreak have been reported in various Local Government Areas of Ogun State, Nigeria (Kistemann et al., 2002). Street food-vending (local restaurants and food hawkers), farmers and poultry mostly get their water from the major source, Ogun River that sends water to taps in the community. Common health challenges in various global health communities emerge from water-borne illnesses.

Over 500,000 deaths resulted from diarrhoea due to bad water used for drinking and cooking in 2012, over 270,000 deaths due to poor water sanitation (Pruss-Ustun et al. 2014). Street food-vending resulting in food poisoning is a critical problem in many developing communities (FAO, 2009. About 87 million occurrences of dysentery and 725,000 demises due to cholera and dysentery in the world is as a result of the shigellosis organism in water. Poor knowledge, bad attitude and educational level are factors that cause poor handling practices of water by food vendors (Cuprasitrut et al, 2011).

An occurrence of water-borne infections symptoms developed in a Local Government Area of Ogun State in late 2005 and early 2006 (Shittu et al., 2010, Akpan et al, 2010). An epidemiological investigation was carried out because of the rate at which the disease spread, it was traced to a possible waterborne source and they treated the municipal water system, and thereafter cases occurred occasionally (Ogunshola et al., 2010). They had to plan emergency health education programs to improve the knowledge of the people and also provided easy transportation to clinics for free treatments (Popoola et al., 2010).

The determinants of the prevention of water-borne infections among food vendors at Ikenne town is a good approach to understanding the level of their knowledge, beliefs system as well as their sanitation practices towards water sanitation that could cause water borne infections.

II. MATERIALS AND METHODS

The study was carried out among food vendors in some selected communities in Ikene Local Government Ogun State, who have been resident in the area for about a year and gave informed consent to be recruited for the study. This Local Government Area was created in September 1991, when Remo Local Government was established. It is a rural settlement featuring five towns: Iperu, Ilisan, Ogere, Irolu, and Ikenne. The area of Jebba is 137.13 square kilometers. Ikenne is the seat of the Ikenne Local Government District. This region is populated by Remo people. The population of this LG is around 72,980. The population of this region is mainly composed of farmers and traders. There is religious freedom for people of all religions, but there are Christians and Muslims in the city. The Local Government has a total of 34 primary and secondary schools. There are private tertiary educational institutions including Babcock University at Ilisan and Ogun State-owned Institute of Social Development at Shasha.

Study Design

A cross-sectional research design was utilized in this study. This design sought to survey participants, regarding their level of knowledge, beliefs, and practices of food vendors regarding prevention of water-borne infections from selected communities in Ikenne Local Government Area in Ogun State.

Sample Size Determination

Participants for this study were food vendors in Ikenne Local Government Area in Ogun State. The total number of registered food vendors in Ikenne Local Government Area is 181, with censored data from the local government.

The sample size was calculated using the total enumeration; number of food vendors in each of the selected communities: Iperu, Ilishan and Ikenne with a total of 155.

Sampling Technique

A two-sampling techniques were adopted in the process of selecting participants, and collection of data.First purposive sampling which was used to select Ikenne Local Government out of twenty local governments in Ogun State. Second convenience sampling was used to select three (3) communities in Ikenne Local Government Area; Ilishan, Iperu and Ikenne

Also, total enumeration was used to select the target participants (food vendors) in the following communities: Iperu, Ilishan and Ikenne who gave their consents to participate in the study and met the inclusion criteria.

Data collection method/instrument for data collection

The instruments used in this study were semi-structured questions. Eliciting socio-demographic variables, level of knowledge of the food vendors on water borne infection, beliefs the food vendors hold as regards water borne infections, level practices of water hygiene among the food vendors, preventive measures adopted by food vendors against water borne infections.

Data Analysis

The descriptive statistics such as frequency counts, percentage, mean and standard deviation was calculated to explain and describe the demographic information while inferential correlation and regression analysis was used to analyse the research hypothesis in the study.

III. RESULTS

The socio demographic characteristics of the respondents, are shown in table 4.1 below. One hundred and fifty-five questionnaires (155) were administered, with a hundred percent response rate (100%).

The respondent's ages ranged from 22 to 70years with a mean of 49.59 ±11.52years. The ages of the majority of the respondents 41(26.5%) fell within the 52 to 61 years age range. Majority of the respondents were female 123 (79.4%), while more than half 77(49.7%) of the respondents were of the Christian faith. A few proportions of the respondents 43(27.7%) had tertiary education, with a small percentage 40(25.8%) of the respondents without formal education and majority of the respondents were married 101(65.5%). The respondents, cut across all the major ethnic groups, with more than half of them 79(51.0%) from the Yoruba ethnic group.

Table 1 Socio-demographic Characteristics of the Respondents

Socio-demographic variables for consideration	**Respondents in this study; N=155**	
	Frequency(n)	Percentage (%)
Age (in years)		
Age (in years) x̄ 49.59±11.52		
22 -31	11	7.1
32-41	35	22.6
42-51	39	25.2
52-61	41	26.5
62-71	29	18.7
Religion		
Christian	77	49.7
Muslim	54	34.8
Traditional	24	15.5
Education		
No formal education	40	25.8
Primary	35	22.6
Secondary	37	23.9
Tertiary	43	27.7
Marital Status		
Single	17	11.0
Married	101	65.2
Separated	25	16.1
Widow	12	7.7
Ethnicity		
Yoruba	79	51.0
Igbo	49	31.6
Hausa	10	6.5
Others	17	11.0
Sex		
Female	123	79.4
Male	32	20.6

Knowledge of the Respondents' Regarding Water Borne Disease

As shown in table 1 below, respondents' knowledge of water-borne disease measured on a 27-points knowledge scale showed the total mean score of 8.97± 2.42. More than half of the participants 104(67.1%) had moderate knowledge on waterborne diseases, with 37(23.9%) of the respondents having a high knowledge and few 14(9.0%) of the respondents with low knowledge.

Table 2 Knowledge of the Respondents' Regarding Water Borne Disease

Variable	Respondents in this study=155	
	Frequency(n)	Percent (%)
Water borne infection can be gotten from unclean water?	94	60.6
It is important to cover drinking water to avoid contamination?	118	76.1
Unhygienic water can cause diarrhoea, typhoid, dysentery, cholera etc	108	69.7
Dirty environment cause water borne infection?	100	64.5
Unhygienic practices can cause water borne infection	96	61.9
Drinking contaminated can cause water borne disease	101	65.2

Boiling/ filtering water can prevent water borne diseases	105	67.7
Symptoms of water borne diseases are:		
Symptom vomiting	51	60
Symptom frequent visit to the toilet	47	55.2
Symptom Typhoid	22	25.9
Symptom Hepatitis	150	96.99
Symptom Malaria fever	141	90.96
Symptom Dehydration	15	17.6
Can water borne disease be spread from one person to another?	58	37.4
Do you think water borne can be treated?	100	64.5

Table 3 Respondents Level of Knowledge Regarding Water Borne Disease

	Respondents in this study; N=155	
	Frequency	Percentage (%)
Low	14	9.0
Moderate	104	67.1
High	37	23.9

Respondents Beliefs of Waterborne

The result obtained from the analysis on the beliefs of the respondents on prevention of water borne diseases, showed that more than half 115(74.2%), of the respondents believed that water borne infections cannot spread from one person to another. Less than half 74(47.7%) of the respondents believed that the source of water has something to do with water borne disease. Also, 52(33.5%) believed that chlorine is still needed even if the water source is from bore hole. Less than half 58(37.4%) disagreed with the statement that they have not suffered from water borne diseases so why should they border themselves. Majority 94(60.6%) of the respondents disagreed that wearing gloves is important in reducing risk of water born disease. Few 45(29%) proportions of the respondents disagreed that water kept in drums is safe to drink. Among the traditional beliefs of the respondents are that sources of water do not determine if one will get infected with water born disease 118(76.1%), water collected from rain is safe for drinking 57(36.8%), water stored in clay pots are safe to use for cooking 88(56.8%) and allowing water to settle after collecting from a stream or rain is safe for cooking and drinking 96(61.9%).

Table 4 Respondents Beliefs of Waterborne

N=155

Items	True F (%)	False F (%)
I feel that if water is boiled to 100^{o}C it is safe to use	115(74.2)	40(25.8)
I think the sources of water have nothing to do with water borne disease	81(52.3)	74(47.7)
Chlorine is not necessary provided the water is from a borehole source	103(66.5)	52(33.5)
Have not suffered from water borne diseases so why should I border myself	97(62.6)	58(37.4)
Wearing gloves is important in reducing risk of water borne diseases	61(39.4)	94(60.6)
Water kept in the drums is save to use	110(71.0)	45(29.0)
Traditional belief		
Sources of water for cooking does not determine one will get infected by water borne infections	118(76.1)	37(23.9)
Water collected from rain is safe for drinking/cooking	57(36.8)	98(63.2)
Water stored in clay pots are safe to use for cooking	88(56.8)	67(43.2)
Allowing water to settle after collecting from a stream or rain is safe for cooking and drinking	96(61.9)	59(38.1)

Respondents practices on water sanitation

The respondents' practices for water sanitation measured on a 7point scale with a mean of 2.57±0.97 showed that 118(76.1%) of the respondents had low sanitation practice with only a few of the respondents 37(23.9%) with high sanitation practices.

Table 5: Respondents Practices for Water Sanitation

N=155

Practices	**Yes** F (%)	**No** F (%)
Do you store your water in a plastic bucket with lid?	89(57.4)	66(42.6)
Do store you water in plastic bucket without lid?	70(45.2)	85(54.8)
Do you store your water in tanks?	111(71.6)	44(28.4)
Do you always wash the water storage (tanks, buckets) regularly in prevention of water borne infections?	122(78.7)	33(21.3)
Do you store water for kitchen use and toilet use in the same bucket?	44(28.4)	111(71.6)

Do you always perform water treatment practices before cooking?	77(49.7)	78(50.3)
Do you think any kind of water can be used in washing cooking utensils, vegetable, and fruits	56(36.1)	99(63.9)

Table 5:Respondents Level of Practices for Water Sanitation.

	Respondents in this study; N=155	
	Frequency	Percentage (%)
Low	118	76.1
High	37	23.9

Respondents prevention of Water-borne Infections

respondents preventive measure of water-borne disease measured on a 5-scale point showed a mean value of 3.24±1.28. Majority 116(74.8%), of the respondents had high preventive measure while only of a few 39(25.2%) of the respondents recorded low preventive measure.

Table 6:Respondents Prevention of Waterborne Disease.

Prevention	**Yes** F (%)	**No** F (%)
Do you think regular sanitation of the surroundings can be a preventive measure against water borne infections?	93(60.0%)	62(40.0%)
Do you think water hygiene practices can prevent the risk of water borne infection?	107(69.0%)	48(31.0%)
Do you think that it is important to have an educational program related to water hygiene practices?	105(67.7%)	50(32.3%)
Have you ever received any teaching about safe water hygiene practices?	100(64.5%)	55(35.5%)
Do you think construction of pipe-borne water stand-pipes in the community can prevent water borne infections?	97(62.6%)	58(37.4%)

Table 7: Respondents Prevention of Waterborne Disease.

Prevention	**F**	%
With whom would you feel most comfortable receiving an educational program related to safe water and sanitary practices		
Health worker	87	56.1
Educator	23	14.8
Community leader	27	17.4
Traditional leader	18	11.6

Table 8:Respondents Level of Prevention regarding Water Borne Disease

	Respondents in this study; N=155	
	Frequency	Percentage (%)
Low	39	25.2
High	116	74.8

Test of Hypothesis

Two hypotheses were tested for this study to determine the knowledge, beliefs, practices and preventives on waterborne Infection among food vendors. In testing these hypotheses, Pearson correlation and multiple regression was conducted at 0.05 level of significance. The decision rule applied was that if the p-value computed was less or equal to the cut-off p-value of 0.05, the null hypothesis will be rejected in favour of the alternative hypothesis and vice-versa.

Hypothesis 1: There is no relationship between respondents' knowledge and prevention of water-borne diseases.

Table 9:Relationship between Respondents Knowledge and Preventive Measure of water-borne Disease

Variable	**Preventive Measure of Water-borne Infection N=155**	
	R	p-value
Level of Knowledge	0.45	0.00
Prevention	0.24	0.003

*significant level 0.01

Table 9 reveals the result of the correlation that there is significant relationship between respondents' knowledge and prevention measures (r=0.45; *p*=0.00). Hence, the null hypothesis is rejected.

Hypothesis 2:

There is no relationship between respondents' knowledge and practice of water-borne diseases.

Table 10:Relationship between Respondents Knowledge and Practices Measure of water-borne Disease

Variable	Practices of Water-borne disease N=155	
	R	p-value
Level of Knowledge	0.22	0.000

*significant level 0.01

Table 10 reveals the result of the correlation that there is significant relationship between respondents' knowledge and practice (r=0.22; *p*=0.000) (See, Table 4.7).Hence the null hypothesis is rejected.

IV. DISCUSSION

The results of this study indicated that knowledge about prevention of water-borne infections is adequate in the study population. For instance, more than half of the participants had understanding about water borne infections. This is at variance with the findings of Bakdursson & Karanis, (2011) and Ferdaus, (2019) where they reported low knowledge among study participants. Also, more than half of the respondents agreed that unhygienic water, practices and dirty environment can cause water born infections, this response was in conformity with earlier findings where it was observed that When water, is not handled with safety measures by food vendors, especially those in rural areas during use and storing, it constitutes health risk to individuals who patronize their products (Ilboudu, & Traore, 2006; Bhagwat, 2019; Ferdaus, (2019). Other findings gave a similar report that Water borne outbreaks are caused by drinking water contamination worldwide (Karanis *et al*. 2007).

More than half of the respondents, also identified typhoid, cholera, dysentery, dehydration as a symptom of water borne disease this agreed with the findings of Ferdaus, (2019) and Sathish & Brogen, (2015) where most of the respondents reported cholera as the symptoms of water borne disease. The result also collaborated similar findings that, cholera is a water-borne disease. (Kaper et al., 1995, Sack et al.,2004). Majority of the respondents believed that clean environment, good water hygiene practices and good teachings about safe water hygiene practices are preventive measures against water borne diseases this is in line with the findings of Vicari et al., (2013), Lucas et al., (2005) that good sanitation, promotion of personal hygiene, improvement in health education and community mobilization will prevent against water borne diseases such as cholera. The findings revealed that there is a relationship between the respondent's knowledge and their practices towards water borne infections. There was also a correlation between respondents' knowledge's measure and their preventive measure. This finding corroborates the findings of Uzma (2017) that knowledge had a correlation with practice on environmental sanitation.

V. CONCLUSION

The deficiencies identified in this study revealed that in spite of the food vendors adequate knowledge about water borne diseases, their practice measure was poor, this could be because of some of their beliefs that goes contrary to public health opinion, this invariably means that having knowledge about a matter does not necessarily translate to actions, a lot of aggressive sensitization and re-education needs to be done in this area by a way of enforcement of already existing laws to curb the lackadaisical behavior of the target population, public health awareness program needs to be taken to the door steps of the target population since majority would rather prefer to receive educational program from a health worker.

VI. RECOMMENDATIONS

Based on the findings of this study the following are therefore recommended;

- The government needs to be pro-active in their effort to reducing water related diseases, basic infrastructures such as clean portable water, has to be provided.
- Awareness and educational program by public health workers needs to continuously run on all media platforms to dispel some of the target population beliefs and increase their practice on prevention of water borne disease.

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