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IDENTIFICATION OF CRISIS ON WATER SUPPLY, SANITATION AND HYGIENE IN RURAL AREA OF OSUN STATE, NIGERIA; KNOWLEDGE, ATTITUDE AND PRACTICE PERSPECTIVES

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ABSRACT: *The research aims to investigate and identify crisis on water supply, sanitation and hygiene practice in rural areas of Osun state, Nigeria; Knowledge, Attitude and Practice (KAP) perspectives. KAP related information on water sources; treatment and storage were studied. The study also obtained relevant information on sanitation as well as hygiene related perceived diseases. The methodologies employed were pre-test structured questionnaire, observation spot check, Focus Group Discussion (FGD) and Key Information Interview (KII) to gather both quantitative and qualitative data. The research was conducted in all local government areas of Osun state, Nigeria. Household's head was the potential respondent, in the absence of household's head any adult in the house was considered as respondent. Relevance of logistic regression, descriptive statistics and sample survey were applied on KAP. It was identified that the knowledge and attitude are significant but practice are not statistically significant enough to prevent associate diseases caused by poor sanitation and hygiene practices among Osun state rural dwellers. It is recommended that the outcome of the study based on KAP, communication channels, campaigns and mobilisation, information, education and communication materials, safe water chain can be used by policy makers and stake holders, as a guide in an effort to sensitise the populace on the need to have a better knowledge, attitude and practice on water supply, sanitation and hygiene, since health is wealth and a healthy nation is a wealthy nation.*

Keywords: Knowledge, Attitude, Practice, Hygiene, Sanitation, Water.

Introduction

This study is the output of Knowledge, Attitudes and Practices (KAP) study, which addresses water, sanitation and hygiene (WASH) in rural area of Osun State, South West, Nigeria. The study focuses on WASH related issues due to many households lacking access to private water, toilet facilities and has inadequate waste-water treatment. The state is located in a coastal flood plain where land based sources of pollution from faecal matter seem to be threatening the quality of water and environmental sanitation. This brings to the fore concerns relating to threats to public health, which may arise when individuals are in contact with faecal pathogens and infectious micro-organisms that are released into the environment.

Safe water, adequate sanitation and hygiene facilities are critical to the survival, growth and well-being of everyone in the society (Bostoen, Kolsky and Hunt, 2007). Universal access to safe drinking water and sanitation is one of the seven promises made by 71 Heads of state at the world summit for children in 1990 to transform and improve the lives of the world children, (Montoute and Cashman, 2015).

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Knowledge, Attitude and Practice (KAP) studies reveal a wide disparity in the priority ranking of water supply and sanitation and hygiene by communities where water is considered the topmost priority of most communities and latrines (as an indicator for sanitation demand) is viewed as the least problem (Fig. 1).

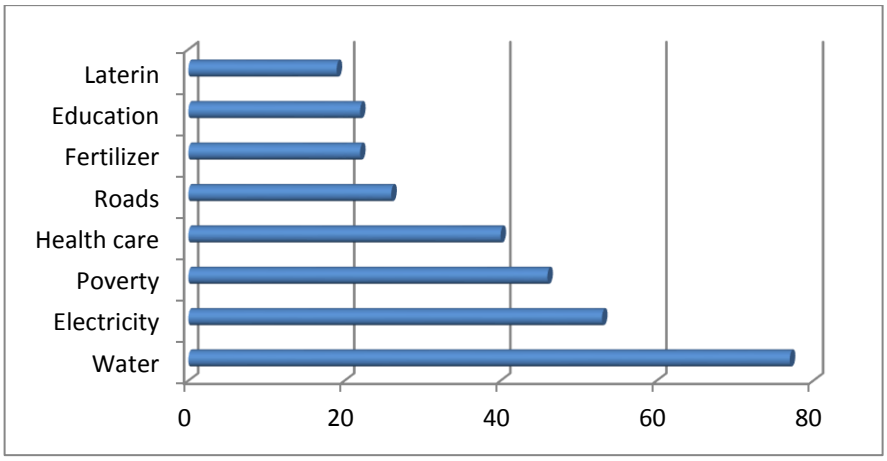

Figure.1: Major Problems Identified by Rural Households in Nigeria.

Source: UNICEF's Knowledge, Attitude and Practice Study, 2017

Previous hygiene studies have indicated that people with proper sanitation and hygiene practices are less likely to report gastro-intestinal and respiratory symptoms. Hand washing with soap has been reported to reduce diarrheal morbidity by 44% and respiratory infections by 23% (Lopez et al, 2009).

Water

A safe water supply has been defined as a source which is likely to supply water which is not detrimental to health. Safe water sources include: a household piped water connection; a public stand pipe; a borehole; a protected dug well; a protected spring and a rainwater collection system (WHO/UNICEF 2000; Cairncross and Valdmanis 2006). It is also worth noting that increased water access does not guarantee increased water use, therefore other factors must come into play. These other factors include cost (affordability by users) and the reliability of supply.

Sanitation

Cairncross and Valdmanis (2006) acknowledged that sanitation refers to excreta disposal but also includes other environmental health interventions. The term sanitation therefore also loosely falls under the broader definition of environmental sanitation, which refers to arrangements which cover issues related to drainage of storm-water and effluents, flood management, collection and disposal of garbage and removal of human excreta (Karn and Harada, 2002). Karn and Harada (2002) further highlight that environmental sanitation involves not only the facilities which are provided by governmental authorities but also includes the attitude of the community.

Hygiene

In addition to the provision of safe community water supply and sanitation services, there is a need for education on hygiene Al-Medhawi, Briggs and Keane (2005). Hygienemay be refered to a practice which is either personal or domestic. It refers to the use of water for cleaning parts of the body and domestic hygiene refers to water used to clean items in the home such as food, utensils and floors (Esrey, Potash, Roberts and Shiff, 1991). In a study conducted in Kaduna State,

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Nigeria, reasons given for not washing hands included stubbornness, laziness, and the dirt and smell of the toilets (Scott, Curtis and Rabie, 2007). Montoute and Cashman (2015) highlighted hygiene practices as key compliment to improved water and sanitation programs.

This research aimed at identifying the current state of knowledge, attitudes and practices of households on water management, sanitation issues and hygiene practices in rural area of Osun State, South West, Nigeria.

Fig.2 Water sources.
Source: *Field observation*

Fig.3: Observed toilets
Source: Field observation

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Fig.4: Observed poor sanitation and hygiene practice in rural areas.
Source: Field observation.

Aim and objectives

The aim of this research is to identify the current state of knowledge, attitudes and practices of households on water management, sanitation issues and hygiene practices in rural area of Osun State, South-West, Nigeria. The following objectives are presented as means of achieving the aim of this research:

i Obtain information on socio-economic and demographic characteristics of the communities in the study area.

ii Obtain knowledge, attitude and practice (KAP) related information on water, sanitation, hygiene, preferences and other developmental problems in the study area.

iii. Appropriate recommendations on KAP.

Hypothesis

H_0: Impact of effectiveness hygiene message is snot significant to treatment of water in rural area.

H_1:Impact of effectiveness hygiene message is significant to treatment of water in rural area.

Methodology

The methodology for this research was based on obtaining primary data. The data were collected in the following stages: Consultations; Pre-test structured questionnaire, observation spot check and Focus Group Discussion (FGD). The research was conducted in selected rural areas of all the local government areas of Osun State Nigeria. Household head is the potential respondent, in the absence of household head any adult in the house can be considered as respondent. The study used the Multi-Stage Sampling method. A simple random sampling method was used to determine the communities per LGA then stratisfied sampling was then adopted based on wards and population. Survey covered 270 households from 60 communities (Rural) from 30 Local Government Areas in the state; 2 communities in each LGA. The findings cover water, sanitation, hygiene and the demographic profile of the population.

Analysis

Analysis was facilitated by means of descriptive statistics and cross-tabulations to assess the variables of interest and their relationships. Logistic regression model and the use of inferential statistics (non-parametric test statistics) are also employed.

Demographic Profile of the Respondents

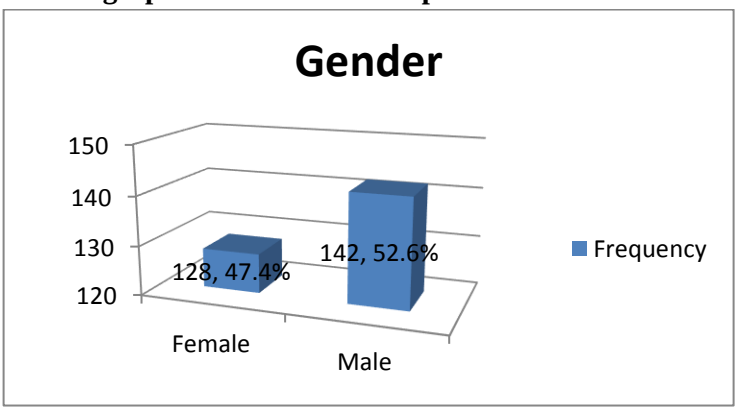

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Fig. 5: Percentage of respondents by gender

Figure 5 shows that majority of the respondents are male 52.6 % compared to the female 47.4%. The selection of the respondents per household was dependent on who was present during the interview.

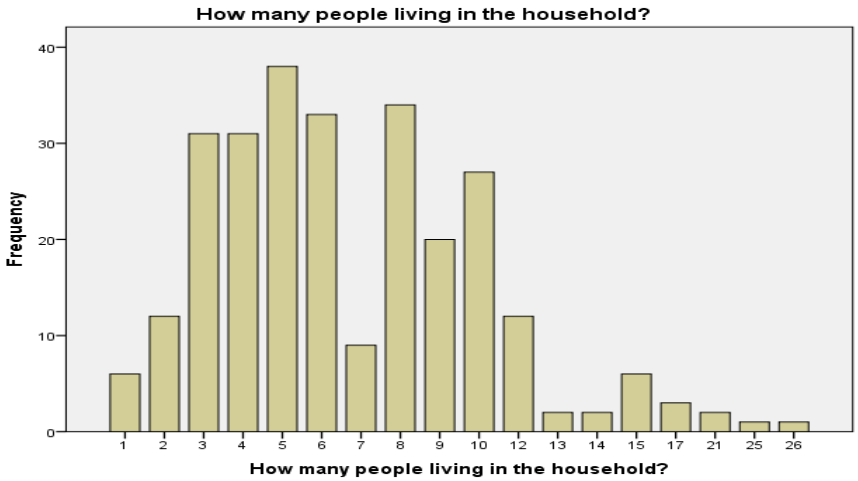

Fig. 6: Family size

Fig. 6 gives the statistics of how the families live together in the rural areas. Family size is an average 7 members because most members of the extended family live under one household. The table shows the concentration of family members. This is generally between 1 and 26 though, some families are polygamous.

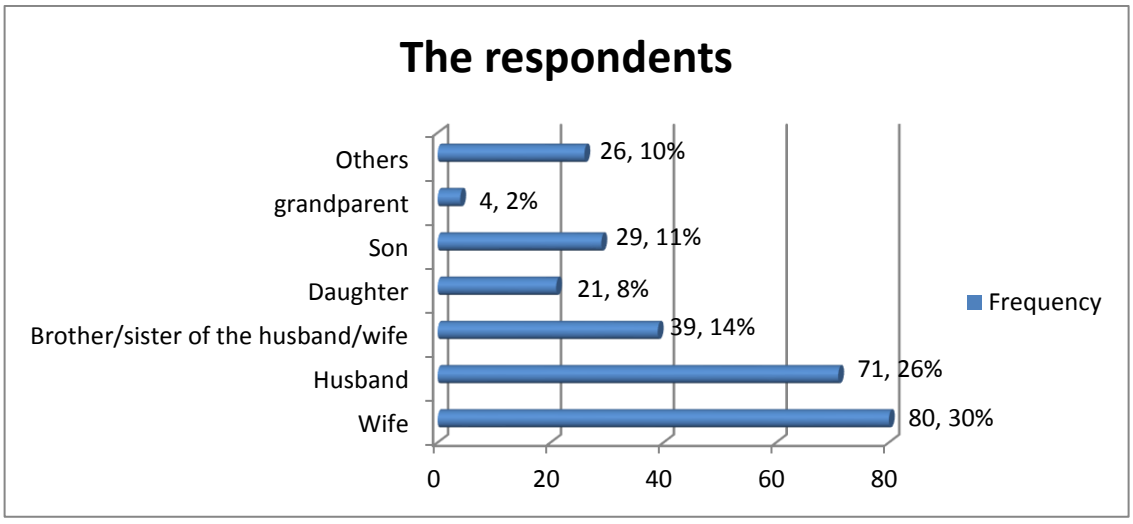

Fig. 7: The respondents

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As shown in figure 7, a high proportion of the respondents are wives (30%), this was due to unavailability of the husband at the contact time.Followed by husband (26%). The rest of the respondents are the sisters or brothers of the wife/husband (14%), son (11%), daughter (8%), grandparent (2%) and other unclassified family members (10%). During the conduct of the study, whoever was available for interview was considered respondent.

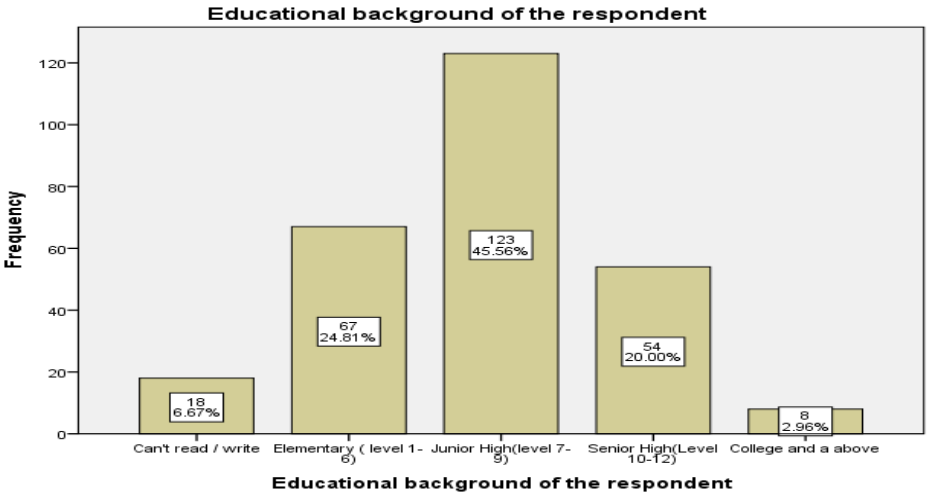

Fig. 8: Educational Attainment

Figure 8shows that 6.67% of the respondent can neither read nor write. The trend shows that fewer people hold higher education (2.96%). There are substantial number of people who have elementary education and senior high schools at 24.81% and 20% respectively. However, close to half of the population have junior school education (45.56%).

Household Water Supply & Practices

Water Sources

Table 1: Water sources and usage

	Drinking (%)	Cooking (%)	Laundry (%)	Hygiene (%)
Pipe line	7.0	7.0	6.3	7.4
Public taps/taps-stand/stand-pipes	5.6	5.6	5.2	5.6
Protected hand pump/borehole/tube-well	17.8	17.8	13.0	17.4
Unprotectedhand-pump/borehole/tube-well	8.1	8.1	8.1	8.1
Protected dug well	21.5	21.5	21.9	21.5
Unprotected dug well	6.7	6.7	18.1	6.7
protected spring	13.3	13.3	10.0	13.3
Protected Rain catchment	6.7	6.7	4.4	6.7

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Unprotected Rain Catchment	5.9	5.9	5.2	5.9
Bottle/Sachet water	4.4	4.4	4.4	4.4
Surface Water (River, dam, lake, ponds,creeks, canal, etc.)	3.0	3.0	3.3	3.0
Total	100.0	100.0	100.0	100.0

***Source**: Authors' field summary observations, March-May, 2017*

By quality of drinking water sources, the table 1indicates that rural dwellers access to improved water reads at 76.3% (summation),which shows unexpected result, may be this diversion is due to level of education observed from surveyed population or awareness of the associated effects of no quality water. A smaller proportion of the residents still fetches their drinking water from traditional and unprotected sources (23.7%).

Water for domestic purposes (cooking, laundry and hygiene activities) is majorly fromprotected sources. However, for laundry purposes bore holes and the like are not so well patronised (13%) compared to others.

Water Collection, Distance, Containers and Treatment

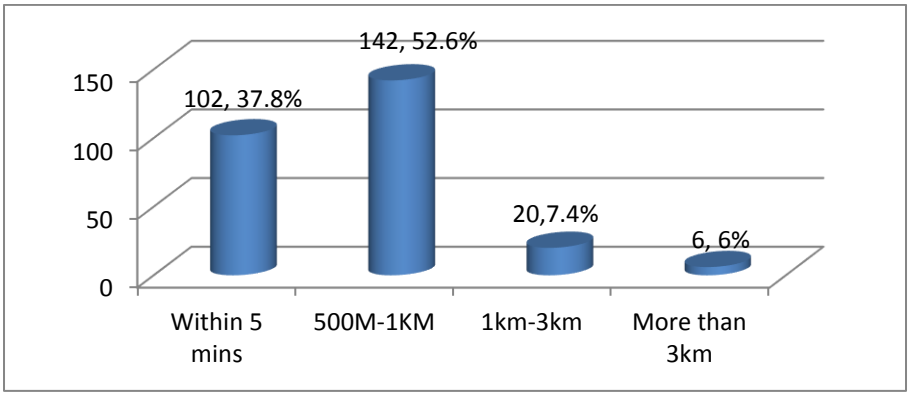

Fig. 9: Distance of water source.

The study found that most water sources are closer to the dwelling places within 500-meter radius as illustrated in fig. 9. 37.8% of respondents are within 500m of the nearest water source. It is observed thatabout half of the respondents (52.6%) walk between 500m and 1 kilometer to collect water. Only 20 (7.4%) of the respondents collect water from more than a kilometer away from their homes with just 6% trekking more than 3km.

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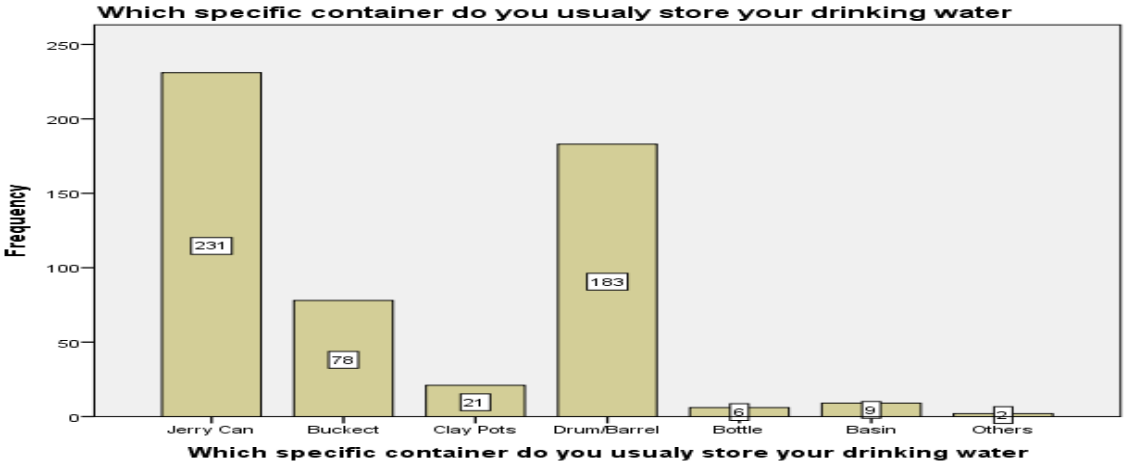

Fig. 10: Water storage containers

Figure 10shows the kinds of containers used for storing drinking water. The report depicts that jerry can and drum/barrel are mostly used as container storage of water for domestic use. Though, there are other containers for water storage (clay pots, bottles, basin and others). The percentage of respondents using these types is negligible. Because of the big opening of the bucket and a high risk of water contamination bucket is not that favoured to store water.

Table 2 shows respondent household percentages that treat their water before use. It shows that only 13.7% treat their water compared to 86.7% that do not.For those treating their water**,** sedimentation is the most common method. There are small portions of the population using traditional treatment methods such as solar disinfection and water filter (0.4%) each, boiling (2.2%) and cloth filtration (0.7%).

For the 86.3% that disclosed that they do not treat water they gave the reason that the water is safe, got used to it and the cost of treatment as the major reason for not treating as indicated in the table 2 below.

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Table: 2: Water treatment practice

	Frequency	Percent
Yes	42	15.6
No	228	84.4
Total	270	100.0

Table 3; If Yes

If Yes		Frequency	Percent
Valid	Not applicable	228	84.4
	Cloth filtration	2	.7
	Solar disinfection	1	.4
	Sedimentation	27	10.0
	Chlorine/water-guard/aquatab/bleach	5	1.9
	Water filter(boisand/ceramic)	1	.4
	Boiling	6	2.2
	Total	270	100.0

Table 4: If No

If No why?		Frequency	Percent
Valid	Not applicable	42	15.6
	Water is safe	121	44.8
	it is expensive	22	8.1
	Do not know how to treat	2	.7
	We are used to the water already	83	30.7
	Total	270	100.0

From the population surveyed, a majority of the population access water for free (91%), while the rest pay. Of those paying, 8% spend less than N100, only 1% pays between N100 and N200.

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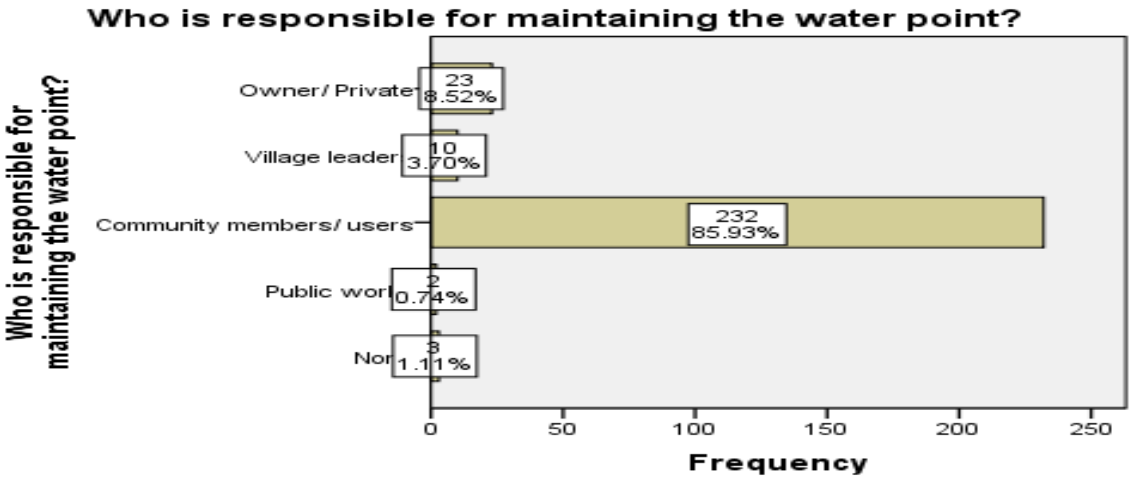

Fig. 11: Responsible for Maintaining Water Points

Water point maintenance rests right on community members or users as shown infigure 11(85.93%) followed by private ownership (8.52%) those who say that no one is responsible (1.11%). Other responsible groups include village leader (3.70%) and public works which is 0.74 per cent.

Sanitation Practices

The section discusses sanitation practices: family latrine use, type of latrine, distance of latrine, reasons for not having latrines, baby's faeces disposal and solid waste management.

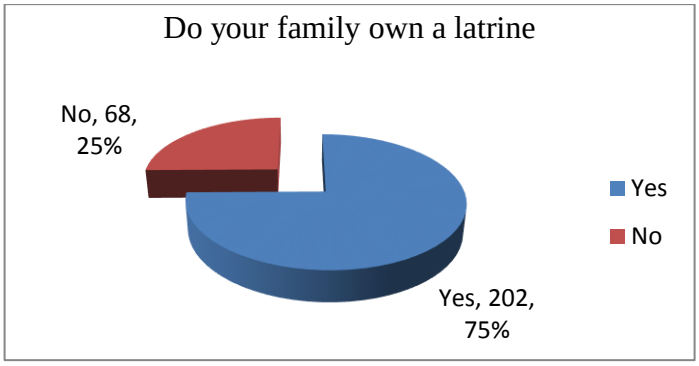

Fig.12: Access to improved sanitation facility

In rural locations access to sanitation facilities is high, it may be due to educational level of the dwellers and most rural areas are not too far from urban.

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Table 5: If NO latrine, where does your defecation?

	Frequency	Percent
Not applicable	155	57.4
Public latrine	63	23.3
Neighbour's latrine	21	7.8
Dig a hole/cat hole	9	3.3
Creeks/ canal/ river	1	.4
Bush/ backyard/field	19	7.0
Others	2	.7
Total	270	100.0

Table 6: If NO latrine, what could be the main family members go for reason why your family cannot construct a latrin?

	Frequency	Percent
Not applicable	163	60.4
Expensive	1	.4
No space for construction	15	5.6
Defecation is not an issue	12	4.4
A lot of space to defecate there	71	26.3
Not a priority	3	1.1
Others	5	1.9
Total	270	100.0

Fig. 13: Household waste disposal

Hand Washing Practices

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The section presents and discusses practices on hand washing, hand washing agents used, reasons for not washing hands with soap and hand washing facilities available at home.

Table 7: Key Times for hand-washing

	Frequency	Percent
Before eating	117	43.3
After eating	35	13.0
After defecation	29	10.7
After latrine use	58	21.5
Before feeding child	12	4.4
After handling rubbish	7	2.6
Before food preparation	9	3.3
After handling animals	3	1.1
Total	270	100.0

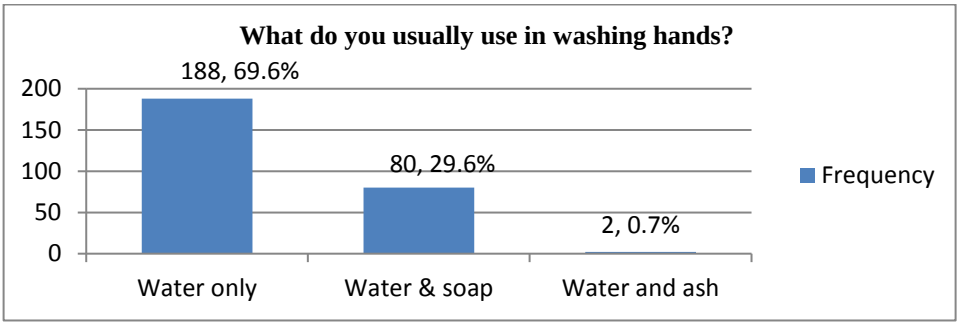

Fig. 14: Hand-washing agents

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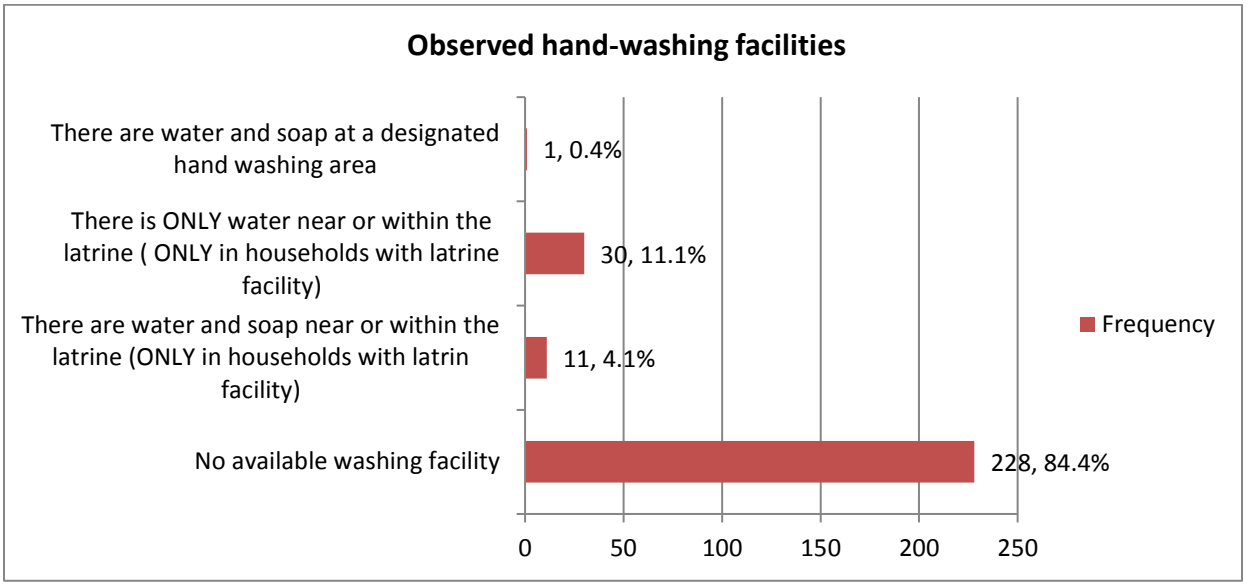

Fig.15: Observed hand-washing facilities

Health and Hygiene Messages

Regarding health and hygiene messages, the respondents were asked if they heard messages in the last three months before the survey was conducted.

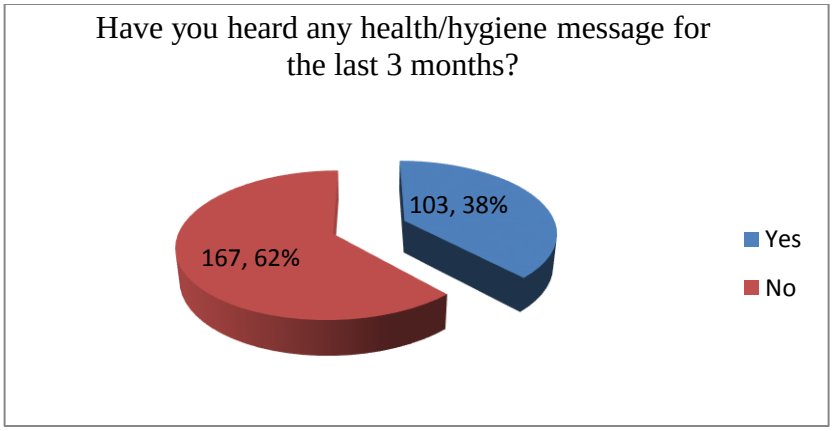

Fig. 16: Access to health/hygiene Messages

Figures 16 presents the sources of the health and hygiene messages the communities heard and the preferred channel to receive specific hygiene messages. Out of 270 surveyed sampled, radio is the leading source of health and hygiene information in the rural locations (11.1%), clinic/hospital (7.4%) and government health workers (5.9%). Other sources of receiving health and hygiene messages include traditional leaders, community events, private groups, posters and school children.

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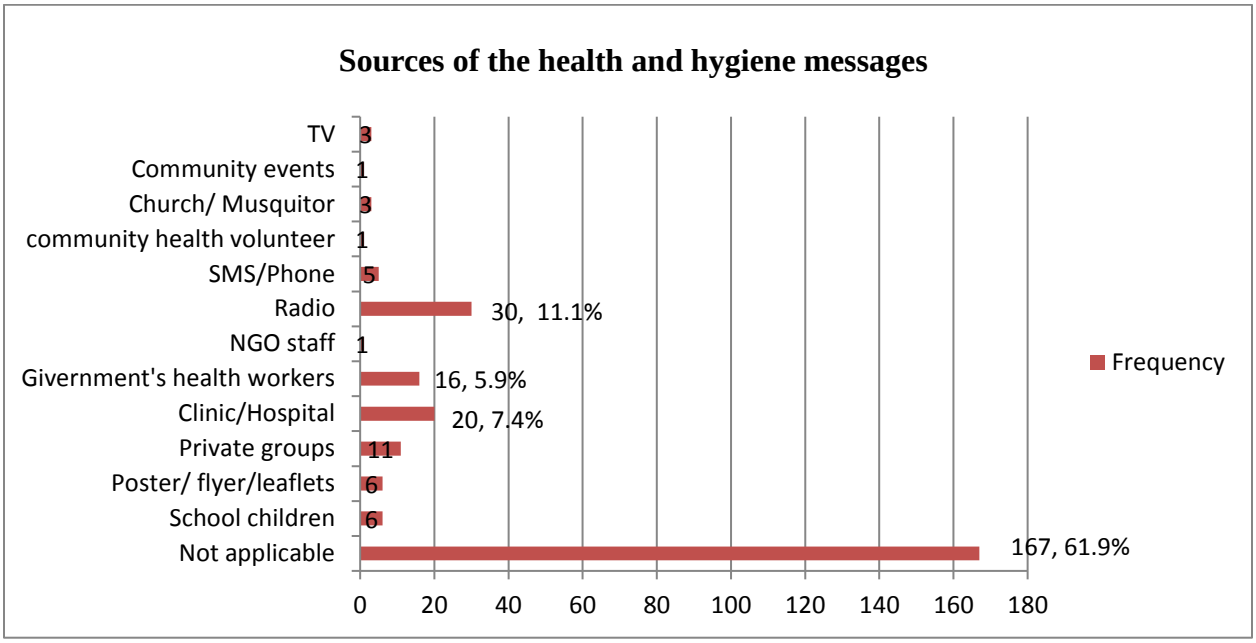

Figure 17: Sources of Health & Hygiene Messages

Inferential Analysis

Logistic Regression

Hypothesis

H_0: Impact of effectiveness hygiene message is snot significant to treatment of water in rural area.

H_1: Impact of effectiveness hygiene message is significant to treatment of water in rural area.

Table 8: Case Processing Summary

		N	Marginal Percentage
Have you heard any health/hygiene message?	Yes	147	54.4%
	No	123	45.6%
Valid		270	100.0%
Missing		0	
Total		270	

Table 9: Asymptotic Correlation Matrix

		Threshold	Location	
		Hygiene Message	Family Latrine	Treat of Water
Threshold	[Hygiene Message	1.000	.582	.603
Location	Family Latrine	.582	1.000	-.244
	Treat of Water	.603	-.244	1.000

Link function: Logistic.

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Table 10: Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[Hygiene Message	1.126	.270	17.414	1	.000	.597	1.655
Location	Family Latrine	.156	.160	.952	1	.329	-.157	.469

On the health and hygiene message, 147 (54.4%) said they heard message on health and hygiene related message (Table 8). Table 9 shows that the message has positive direct relationship to both family latrine and treatment of water (0.582 and 0.603 respectively). In conclusion, from the table 10 is accepted since the p-value is 0.000, meaning that impact of effectiveness hygiene message is significant to treatment of water in rural area.

Conclusion

It was evident that the most pressing of all the WASH issues discussed were sanitation problems. In rural areas, where toilets of septic tanks is less achievable for some households. Unfortunately, provision of private toilet and septic tanks to most residents may not solve the sanitation problems if water is not adequately available. For those households who depend on small storage and collection containers, the ability to engage in good water handling practices is limited by the nature of these containers. Residents were quite aware that open defecation and improper disposal contribute to environmental pollution and public health hazards. The attitude of residents towards WASH was significant for the most part. It was found that rural area has direct relationship with type of latrine a family is using and how they treat their water for consumption. Inferential analysis found that treatment of water is significant with high impact on the effectiveness of hygiene message to the dwelling area. Finally, the research has been able to identify the knowledge and attitude to be above average but practice is not statistically significant enough to prevent associate disease caused by poor sanitation and hygiene practice of Osun state rural dwellers.

Recommendations

(i). Knowledge versus Practice : There is a need to use different strategies and approaches to translate peoples' knowledge into practices and positive behaviours.

(ii). Communication Channels: The use of mass and social media as well as live drama presentation along with games and plays can increase not only awareness but also practices. House visits, training, focus group discussions and sessions also highly recommended by the respondents.

(iii). Campaigns and Mobilisation: Aside from mobilising community members, it is good to target other

important elements of the society such as the community leaders and local government units and line agencies to make the campaign stronger. There is need to advocate for sustainability of water and sanitation facilities.

(iv). Information, Education and Communication (IEC) Materials: The IEC materials in line with government agencies and other organisations to make the activity more relevant and responsive to the needs is required.

(v). The Safe Water Chain:A series of safe water practices from water point to withdrawing water from storageshould be maintained to prevent high risk of contamination.

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