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A STUDY OF RESIDENTS PERCEPTION TOWARDS MAIN WATER SOURCES ALONG THE VOLTA RIVER- THE CASE OF SOUTH TONGU DISTRICT

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ABSTRACT

The present study is an investigation of use of water, water sources, and relationship with location of residents in the South Tongu district, Ghana. The study used quantitative approach and used survey method for data collection. Based on the sampling approach administered in the three communities along the Volta River namely Fievie, Sogakofe and Tordzikpota, The study generated a usable sample of 160 respondents. The reliability of the measure was tested with internal method of Cronbach alpha and we found satisfactory result. the result shows that along the three communities, river water was used as the main source. The key reasons for using the water source included river being the only source and its proximity to the residence. In terms of perception regarding quality of water, the respondents show that the communities we surveyed mostly considered water clean based on its physical appearance and taste. Overall, result shows that in the communities we surveyed, there is a lack of awareness and knowledge regarding the

quality of water and its improvement methods thus exposing the community to the water borne diseases.

Keywords: Water, Diseases, Clean, Volta River, Community, Ghana.

INTRODUCTION

Water is essential to all aspects of human wellbeing, such as food, energy security, and health. Hunter et al (2010) noted that good health is dependent on safe, reliable, affordable, and easily accessible water supply. Water is perhaps the most precious asset on earth and for that matter there is competing demands for its usage for drinking, domestic use, waste disposal, industrial processes, irrigation, hydroelectricity, transport and recreation, as well as ecosystem functions and services. Water demand has tremendously increased as a result of population and income growth, and the expansion of industry and irrigated agriculture. This phenomenon has culminated into demand exceeding supply in many developed and developing countries. Unfortunately, the available freshwater supplies are not evenly distributed in time and space (Gleick, 1993; Hunter et al, 2010). According to UNICEF (2008), safe water is a precondition for good health and development and a basic human right. Lack of access to quality water has contributed to many water-related diseases in Africa. Waterborne diseases are among the main killers of children under five years. Annually, death from the usage of unsafe water exceeds death recorded through violence, including war (WHO 2002). Ghana is also affected by lack of access to improved water sources. Currently, close to 3 million people in Ghana depend on surface water to meet their daily water needs, leaving them susceptible to water related health risks (<http://ghana-water/crises.water.org>

Problem Statement

There is an alarming rate of water related health risks issues in South Tongu District due to lack of public awareness and educational campaign concerning the uses of unimproved water. Ghana Multiple Indicator Cluster Survey (2011), states that rural dwellers are less likely to have access to safe drinking water than the urban dwellers at 69% and 91% respectively. Consequently, unsafe water sources are highly dependent on by rural dwellers in Ghana (<http://ghana-watercriseswater.org>). Meanwhile, the turbidities of most local surface waters in rural areas are greater than 200 NTUs (Nephelometric Turbidity Units) and contain high microbial and faecal contamination, exposing children and the rest of the population at high risk to water related diseases (Mintz et al, 2001). In Ghana, the use of unimproved water for cooking, drinking, washing and cleaning to a large extent account for waterborne health risks such as diarrhoea, hepatitis A, typhoid, and so on in the rural communities (CWSA, 2013). A diarrhoeal disease is identified to be among the top ten causes of deaths in Ghana (WHO, 2015). Not only these water related diseases affect health of the people, it also affects their economic livelihood and social lives as well as education of children. Many of these diseases find more expressions in rural areas and most commonly in communities along the Volta River in South Tongu District. Although, a plethora of studies have been conducted into water related issues, for instance, a study by Gbedemah, (2010) looked at the management, uses and values of demand-oriented domestic water facilities in Akatsi District of Ghana. Mensah and Antwi, (2013) researched into bridging the water and infrastructure gap. Another study by Owusu-Sekyere et al, 2013 looked at

coping with water scarcity, household water supply vulnerability in low income communities. These studies focused much on issues of quantity of water, infrastructure, and management of water facilities. Besides, the most recent study conducted in the District by Kumi-Ayeh et al (2016) explored the relationships between malaria, schistosomiasis, soil transmitted helminths and malnutrition. Yet, these studies have completely failed to assess the level of awareness and knowledge about water quality improvement in the South Tongu District, a gap which this study set up to fill. This study intends to fill this literature gap.

Research Questions

What is the relationship between location of residents and sources of water?

Aim and Objectives of the Study

The main objective of this study is to assess the relationship between location of residents and primary sources of water.

LITERATUR REVIEW

Sources and Uses of Water

According to Water Resource Institute (2006), the Earth's surface is covered by more than 70% of water. Although water is seemingly abundant, the real issue is the amount of fresh water available. WRI (2006) indicated that 97.5 percent of all water on Earth is saline water, with the remaining 2.5 percent as fresh water. Surface Water

The surface water sources comprise of rivers, lakes, ponds and streams which are opened to the environment. They have a wide variation in flow and this affects water quality which occurs particularly in wet periods where water carry a very high silt load and washes feces into the river resulting in high risk of contamination (<http://www.who.org>).

Groundwater

This source of water is obtained from springs, shallow wells and shallow or deep boreholes. Groundwater provides one of the safest sources of water for domestic and other forms of uses. According to UNDP (2003) rural areas are the main beneficiaries of groundwater as their domestic and agricultural water use is satisfied. In United States of America, the rural population constituting over 95 percent depends on groundwater source, and hundred millions of people in Africa depend on groundwater for household supply, often from individual boreholes due to low per capita water availabilities (UNEP, 2003).

Rainwater

In the absence of surface water and groundwater when accessibility is difficult or too salty or acidic, the use of rainwater becomes very important (WaterAid, 2013). Rainwater is collected from most forms of roof including tiled roofs, or roofs sheeted with corrugated mild steel and thatched or palm leafed surfaces are preferably used in the rural settings. Whilst US EPA (2008) conceded that collecting and using rainwater can be a better way to conserve resources, WaterAid (2013) conversely opined that rainwater provide some of the cleanest naturally occurring water that is available everywhere. Rainwater is used by many for drinking, irrigating plants, cleaning, bathing, etc.

Availibility of Water Bodies/ Resources

One of such resource in this particular instance in the study area is water bodies/resource. The use of water plays very significant role in life of every living organism including respondents in

the study area. Therefore, health of the people, basically depend on the use of water. Apparently certain activities that are undertaken within the environment such as farming, construction and industrialisation change the state of the environment which equally affects water resources. This tends to create the atmosphere for breeding of diseases which mostly impact on the health of people. The people suffer much from water related health risks which are gotten through drinking contaminated water, contact with infected water. The containment of these diseases depends greatly on health services to the people in the district. However, few limitations to health services to the people are determined mainly by availability and accessibility.

STUDY AREA AND METHODOLOGY

Study Area

The area chosen for this study is situated in south of the Lower Volta Basin. The District is bordered to the north by the North Tongu and Central Districts, the Akatsi South District to the east, the Ada East District to the west and to the south by the Keta Municipality. The South Tongu District occupies a total land size of 643.57 square kilometres (STDA, 2006).

Research Design

This research adopted survey design in gathering data for this study. A survey design involves data collection to provide answers to research questions pertaining to the present state of issues or phenomena (Winchester, 2005). Although there are other designs available including case study design which can also be applied to this study, survey design is considered the most appropriate due to the following reasons.

Research Strategy

This research employed mixed method strategy. The mixed method strategy as identified in Creswell (2009) is a term that focuses on mixing different methods in a single research.

Target Population

Kothari (2004) explained population as all the objects under consideration in any field of inquiry. Therefore, it would be representative in nature if these communities were used as the population for those communities, elsewhere in Volta, depending on this water source. The target population in order to achieve the objectives of this study is the members of these communities who are 15 years and above and resident in the community for at least one year.

Research Instrument

Quantitative data was gathered from the field using questionnaires. The questions included both open-ended and close-ended questions. The questions included about respondent's water sources, followed by awareness level of people about measures taken to improve water quality at the households,

Sample Size for Quantitative Data

The study took population statistics from the department of planning of the South Tongu District Assembly. However, a major difficulty with the population data was the absence of the community breakdown population statistics of the 2010 Population and Housing Census. Notwithstanding, estimates were created with assistance from the District Assembly Planning officer. The estimated figures were then used to calculate for the

sample sizes in each community. Using sample size formula,

$$S = \frac{Z^2 NP(1-P)}{d^2(N-1) + x^2 P(1-P)}$$

indicated by Krejcie and Morgan (1970) where S= sample size, N= Population Size, X= Z value, P= Population proportioned= Degree of accuracy, for all the three communities. The final output resulted in 38 questionnaires for Tordzikpota, 49 questionnaires and 73 questionnaires for Fievie and Sogakofe respectively, adding up to 160 questionnaires distributed to the targeted respondents. This sample size was large for the purposes of quantification and representativeness needed for quantitative studies (Bazeley, 2004, cited in Teye, 2012). This was to ensure that populations were fairly epitomized in the study to permit a more thorough analysis and interpretations (Teye, 2012).

Sampling Technique

The three communities were purposively selected for the study along the Volta River included Fievie, Sogakofe and Tordzikpota. The justifications for the selection of these communities were based on their location and very high tendency of some communities using water from the Volta River due to lack of portable water.

Qualitative Data

Sample Size for Qualitative Data

The respondents for both the interview and focus group discussions were purposively selected for this activity. A total of 9 stakeholders were selected for interview during the field work.

Table 1
Stakeholders and Interviewed Conducted

Stakeholder	No. Interviewed
Health Directorate official	1
Public Health Nurse	1
Assembly Man	3
Traditional Authorities	2
Unit Committee Member	2
Total	9

Source: Field Data, (2016)

Interviews

Qualitative data was collected through in-depth interviews with key informants. Broshenka and Castro (1983) described a key informant as someone who is regarded to have some deep facts pertaining to the research problem and who is ready to talk (cited in Teye, 2008).

Validity of Instruments

Validity of instrument is frequently defined as the degree to which an instrument measures what it purposed to measure (Kimberlin & Winterstein, 2008). An initial questionnaire was sent to Ten (10) respondents on the subject, thus pilot questionnaire, to check the depth of the items under constructed. The response from these respondents was used to enhance the content and eliminate ambiguity and duplication of test.

Reliability

Reliability refers to whether you get the same answer by using an instrument to measure more than once (Zhang, 2000). Reliability is a statistical tool to measure how reproducible the surveying instrument data is (Zhang, 2000). For the purpose of this research internal consistency method was used because it is the most widely used reliable estimate in empirical research (Zhang, 2000; Conca et al., 2004).

Data Analysis

Data collected for the study was analyzed base on the research questions using Descriptive statistics including frequencies, percentages, as well as some inferential statistics (Factor Analysis) were employed in the analysis of the data to make meanings to the responded questions from the respondents.

The Background Characteristics of Respondents

Table 4.1 shows that majority of the respondents (46.3 percent) were 31-45 years old, followed closely by respondents in the 15-30 years age group with 31.9 percent. This shows that respondents are highly youthful in nature between the ages of 15 to 45 years. The group falls into the active working group that usually engaged in most of the activities including house chores such as cooking, search for water and so on. The group was able to provide valuable information concerning current water situation within their communities

Table 2
Background Characteristics of Respondents

Variables	Freq	%	Variables	Freq	%
AGE			SEX		
15-30	51	31.9	Male	59	36.9
31-45	74	46.3	Female	101	63.1
46-60	15	9.4	Total	160	100.0
61 and above	20	12.5			
Total	160	100.0			
LENGTH OF STAY			LEVEL OF EDUCATION		
Born Here	74	46.3	No Education	39	24.4
1-10 years	44	27.5	Primary	37	23.1
11-20 years	20	12.5	JHS/JSS	45	28.1
21-30 years	14	8.8	SHS/SSS	29	18.1
31-years and above	8	5.0	Tertiary	10	6.3
Total	160	100.0	Total	160	100.0

Source: Field Data (2016)

The age structure corresponds with the youthful distribution of the District's population (GSS, 2010). On the other hand, the relatively older respondents from the ages of 46 to 60 and above provided detailed insights into the prevailing general water situation pertaining in the study area. The sex distribution favoured the female respondents as confirmed in table 4.1. The female population represented 63.1 percent of total respondents and men accounted for only 36.9 percent. Respondents' general levels of education were also investigated in this study. The result in the Table 4.1 reveals that primary and JHS education accounted for 23.1 percent and 28.1 percent respectively followed by secondary and Tertiary education accounting for 18.1 percent and 6.3 percent respectively. Significantly, 24.4 percent had no education at all. The study also sought to find out the main occupation of the people in the area. Table 4.4 showed different characteristic feature of distribution of occupation among the communities. The predominant occupation of respondents of Fievie and Tordzikpota was farming and fishing. About 57.2 percent of respondents in Fievie engaged either in farming or fishing while 71 percent of respondents in Tordzikpota also engaged either in farming or fishing. However the situation in Sogakofe presented different picture with about 52 percent of respondents embarked on trading or commercial activities. Significant respondents of 13.7 percent were in the civil service while the other sectors such as farming, fishing, and construction and so on sharing the rest of the percentages.

Table 3
Occupation of the Respondents

Community	Farming	Trading	Fishing	Civil Servant	Others	Total
Fievie	18 (36.8%)	6 (12.2%)	10 (20.4%)	3 (6.1%)	12 (24.5%)	49
Sogakofe	2 (2.7%)	38 (52.1%)	6 (8.2%)	10 (13.7%)	17 (23.3%)	73
Tordzikpota	16 (42.1%)	5 (13.2%)	11 (28.9%)	1 (2.6%)	5 (13.2%)	38
Total	36	59	27	14	34	160

Source: Field Data (2016)

The study further revealed vital information on income of respondents in their various communities. From the table 4.5, a large number of the total population generally, thus the three communities, Fievie, Sogakofe and Tordzikpota earned less than Gh 100.00 accounting for 55 percent. This was closely followed by 100-300 Gh cedis and 301-500 Gh cedis representing 33.1 percent and 8.8 percent respectively. The specific result points out that 61.2 percent of respondents from Fievie, have an income level hinged on less than 100 Gh cedis, whereas, 43.8 percent of respondents in Sogakofe being the capital, declared their level of income also on less than 100 Gh cedis. Tordzikpota recorded the highest percentage of respondents of 68.4 percent who earned least income level, 100 Gh cedis. Critical observation of income level ranging from 100-300 Gh cedis, revealed that Sogakofe had 34.2 percent of respondents who earned income between 100-300 Gh cedis and was followed by 36.8 percent of respondents from Fievie community. Aside these, Tordzikpota, hit the least level with 26.3 percent of respondents having the income ranging from 100-300 Gh cedis. The result further indicated that 15.1 percent of respondents from Sogakofe, 2.0 percent and 5.3 percent of respondents from Fievie and Tordzikpota respectively have their income levels ranging from 301 - 500 Gh cedis whereas only 6.9 percent of respondents from Sogakofe declared their income level to be more than 500 Gh cedis.

Table 4

Respondents Income in Ghana CEDIS

Community Total	<GHC100	GHC 100-300	GHC 301-500	> GHC 500
Fievie	30 (61.2%)	18 (36.8%)	1 (2.0%)	0 (0%)
Sogakofe	32 (43.8%)	25 (34.2%)	11 (15.1%)	5 (6.9%)
Tordzikpota	26 (68.4%)	10 (26.3%)	2 (5.3%)	0 (0%)
Total	88 (55%)	53 (33.1%)	14 (8.8%)	5 (3.1%)

Source: Field Study (2016)

Main Sources of Water

The relationship between location of residents and sources of water Understanding the relationship between location of residents and sources of water plays very significant role in assessing the health of people. Apparently, a water source available to households is a major determinant of health conditions that may exist in particular community as indicated in the literature. With this understanding, the policy makers and development partners will be greatly influenced to formulate and implement strategies to improve upon available water sources in order to eliminate associated water related diseases among communities. This section tries to comprehend the general water situation and how people of South Tongu living along the Volta River are affected. Based on this, the researcher employed crosstab and chi square to establish if there exist a relation and the significance of water situation and its effect on people of South Tongu. Table, 4.6 illustrates the results on main source of water as well as the relationship between location of residents and sources of water with the Chi-square test.

Table 4.6 shows that 93.9 percent of respondents use river as their main source of water at the household level at Fievie, Sogakofe accounted for 5.5 percent and Tordzikpota accounted for 100 percent. Talking about well water, Fievie had 0.0 percent, Sogakofe recorded 2.7 percent and Tordzikpota accounted for 0.0 percent whereas the stand pipes use in the three communities accounted for 6.1 percent, 91.8 percent and 0.0 percent at Fievie, Sogakofe and Tordzikpota respectively.

Table 5

Community Main Source of Water for the Households

Community	River	Well	Stand Pipe	Total
Fievie- Count	46	0	3	49
% within 100 Community	93.9%	0%	6.1%	100%
Sogakofe- Count	4	2	67	73
% within 100 Community	5.5%	2.7%	91.8%	100%
Tordzikpota	38	0	0	38
% within 100 Community	100%	0%	0%	100%
Total	88	2	70	160

X²= 133.364a, df= 4, p< 0.000

Source: Field Data (2016)

To determine whether there is any significant association described by the respondents based on the responses which were computed by the crosstab, a Pearson chi-square test was conducted. The chi-square test conducted shows a significant relationship between location of residents and available sources of water with a chi-square value of 133.364 at a degree of freedom of 4 which is significant at $p < 0.000$

The implication is that respondents would depend on water sources found within their locality. Therefore, communities with more than one source would have the options of selecting cleaner and safer water source amongst the available sources for use whiles those with only one source

would be forced to use it as such irrespective of the quality, thereby predisposes the people to health risks associated with these unsafe water sources.

This outcome provides a very strong clue that geographical location of resources actually influence establishment of communities around these resources. As the resources play very vital role in sustaining survival of the people. Thus people always find it more convenient to locate near or close to resources such as water source. The result also established that there was strong relationship between where residents are located and their water sources at a significant level of 0.001. Many residents of South Tongu therefore are influenced to live close to or along River Volta for many immense benefits this resource tends to offer. Access to and use of safe water for drinking, cooking, bathing, washing, irrigation and so on contribute immensely to health, productivity and social development. The water source provide the basic livelihood for the people through farming activities particularly rice cultivation, fishing, animal rearing which formed the main backbone of the economic activities within the district and an indication of the relation of why the residents of the locality choose to be closed to the water source. As a result many people are self-employed making them economically viable which enhance their living standard thereby reduces the high level of poverty among the people. As pointed out in the literature, domestic use of water basically help in the improvement of the health status of the people in order to avoid dehydration, improve personal hygiene and other health related problems associated with lack of clean or sufficient water.

Notwithstanding these immense benefits, thus economical and health, the respondents gained from the main available surface water source, they also certainly suffered great deal of health related risks through the use of this water source since it is generally the available source of water accessible to the rural folks while the appropriate measures to enhance quality of this water source are unlikely or to be taken. This opinion unifies with a study by Naiman et al. (1995), where it was revealed that most surface water in North America would be unpotable without some form of treatment to remove pathogens and contaminants. Several diseases were identified to be prevalent among people depending on this water source for their daily uses and activities based on this study. These diseases affected the health of most of the people thereby rendering them incapacitated. Consequently people become less productive as their economic activities could not be attended to. This discussion further corroborated the finding of WHO (2001) that lack of equal access to safe and portable water compel women to spend hours every day in search of water, causing low productivity, loss of energy and health related risks in the developing countries particularly in the rural areas. As a result, people are forced to utilize water from unsafe sources exposing them to diseases. Also, beyond those who were directly affected with these diseases, the care givers to these debilitated patients had been equally unable to engage in any economic activity causing low productivity. The people are mainly farmers, fisher folks and traders whose incomes were directly derived from these economic activities related to the use of this water body without any other additional source of income.

Furthermore, in assessing main sources of water available in the study area, the result reveals that different communities have access to different sources of water. Generally, it is worth noting that urban areas are the largest beneficiaries of infrastructural development and it is not surprising that water infrastructural facilities are extended to these areas. On the other hand, rural

areas tend to lack most of these infrastructural facilities including water infrastructure which fundamentally formed the basis of sustainable livelihood and survival of the rural folks. Out of the three communities where the study was conducted, it was identified that Sogakofe which is also serving as the district capital had pipe borne water as their main source of water. However, Fievie and Tordzikpota communities which are typical rural areas depended solely on the river as their main water source for all their household activities including drinking, cooking bathing and so on.

Reasons for Choice of Water Sources

As displayed in Table 4.7, it can be seen that varied reasons are outlined by respondents from these communities for which specific water source is preferred or chosen for use. In Fievie community, 93.9 percent of respondents admitted that the justification for the choice of water source they used which is primarily the water from the Volta River is because it is the "only source" of water available in the community. Similarly, 100 percent of respondents from Tordzikpota declared that the use of the Volta River as their main source of water is justified on the basis that it is the "only source" Unlike Sogakofe the district capital, respondents relatively expressed diverse justifications for the choice of water source in their community. As many as 42.5 percent respondents justified their selection on the grounds of "proximity". A significant respondents of 39.7 percent and 17.8 percent defended their preference for water source use on the basis of "taste of water" and "affordability" respectively. This outcome is expounded further during focus group discussion session with some members the communities.

This assertion is confirmed by a participant during one of FGDs:

"We people in this community have no choice than to use water from the river, because this is the only available source of water here and that is what we use for everything-drinking, cooking, bathing, and washing"(FGDs Tordzikpota).

The same view is expressed in an interview with one of the community leaders: "In this community, the chief, opinion leaders, and every one of us work hard for pipe lines to be extended to this community with the help of the government. However, after two years of extension of the pipe lines, we are yet to see a drop of water flowing through the pipe lines. So we do not have any option than to use water from the river which is the only source of water in this community"(Assembly man, Fievie).

Table 6
Reasons for Choice of Water Sources

Community	Reasons								Total
	Proximity		Affordability		Only source		Taste of water		
	Freq	%	Freq	%	Freq	%	Freq	%	
Fievie	1	2.0%	0	0.0%	46	93.9%	2	4.1%	49
Sogakofe	31	42.5%	13	17.8%	0	0.0%	29	39.7%	73
Tordzikpota	0	0.0%	0	0.0%	38	100%	0	0.0%	38
Total	32	20%	13	8.1%	84	52.5%	31	19.4%	160

X²=148.935, df=6, p<0.000
Source: Field Data, (2016)

The chi-Square test shows a Chi-Square value of 148.935 with a significant figure of 0.000 at 5% significant level. Since the probability value of 0.000 is less than the significant level of 0.05, it is concluded that, there is a statistically significant relationship between reasons for choice and available water sources. The implication of this result is that availability of more than one water source in every community is very important when it comes to choice. The findings therefore suggest that people are more likely to use the only available source of water in the community when there is no alternative water source.

Hence, people of Sogakofe have options to choose from, as they have more than a source of water, for which they tend to depend less on unimproved water sources. However, the people of Fievie and Tordzikpota are forced to use unimproved water sources such as Volta River more than Sogakofe people creating large difference between urban and rural folks dependence on unimproved water sources. The literature also acknowledged that a little below 80 percent of the populations in South Tongu District are mainly rural settlements which implies that most of these areas are without potable water creating, large discrepancies in supply of portable water to rural areas that lack infrastructure than urban areas.

The study therefore finds that rural areas without pipe borne water depend on unimproved sources of water mainly from the Volta River than urban areas in the district. This study confirmed the findings of Boone et al (2011) that rural areas depended on surface water sources more than the urban areas which reflect in the statistics as 44 per cent of rural households fetch water from a stream, pond, river or lake with the urban areas recording 8 percent. Additionally, the study is consistent with Gyau- Boakye and Dapaah-Siakwan (1999) assertion that in Ghana many rural communities used water from unimproved sources and due to high level of pollution, water borne and water-related diseases are widespread in rural communities.

Perception about Main Source of Water

In order to assess the quality of water used in these communities, the researcher elicited from the respondents their perception about the water quality used by the respondents in the study area which is presented in Table 4.8. Observing from the Table 4.8, the result indicated generally that 77.6 percent, 90.4 percent and 94.7 percent of respondents in the three communities, Fievie, Sogakofe and Tordzikpota respectively considered their water source as clean. However 9.6 percent of the respondents from Sogakofe described one of the water sources as salty whereas the other two communities Fievie and Tordzikpota with 22.4 percent and 5.3 percent of respondents respectively affirmed their water sources as coloured which is attributed to run off water into the water body particularly in the rainy season.

Table 7
Perception about Main Source of Water in the Communities

Quality Description				
Community	Clean	Salty	Coloured	Total
Fievie	38 (77.6%)	0 (0.0%)	11 (22.4%)	49
Sogakofe	66 (90.4%)	7 (9.6%)	0 (0.0%)	73
Tordzikpota	36 (94.7%)	0 (0.0%)	2 (5.3%)	38
Total	140	7	13	160

Source: Field Data (2016)

This is confirmed by discussant during the FGDs:

“In our community Sogakofe here, water is never a problem since we have pipe borne water, well water and the water from the Volta River. But pipe borne water is considered cleaner than the water from the river whereas the well water is usually salty, so we always use pipe water for all household chores including cooking, washing as well as drinking” (woman from Sogakofe).

Another participant expressed diverse view during the FGDs:

“The source of water available is the Volta River which is always clean throughout the dry season but it becomes very dirty and mostly brownish in colour as a result of run-off water into the river making it unsuitable for use” (man from Tordzikpota).

Similar view was expressed during different FGDs:

“The Volta River we depend on is clean but our problem is that, sometimes herdsmen send their cattle to feed along the river, mostly during the dry season when grasses are not available, where animals defecate and urinate into the water leading to contamination” (Woman from Fievie).

Undoubtedly, in all the three communities there was an overwhelming response to the effect that the main source of water available within their respective communities was clean. The result is an indication that many of the people's perception about quality of water is determined on the basis of appearance of the water which really goes beyond mere look meaning that most people lack better understanding of quality of water they use which has an implication for their health. So, any source of water that comes clear in terms of its appearance or colour irrespective of the source is considered safe for use without any form of improving water quality is expected to expose many of these people to severe health risk unknowingly.

The further insinuation is that communities perceived the quality of water sources as clean exclusively on the basis of physical appearance. As result people from these communities are prone to health risks associated with the use of surface water directly except Sogakofe people who mostly depend on pipe borne water that undergoes some form of treatment. This account falls in line with UNICEF/WHO (2015) report that those who use surface water face the greatest risks to their health and well-being. The same account also resonates with Gyau-Boakye and Dapaah-Siakwan (1999) that many rural communities used water from unimproved sources and due to high level of pollution, water borne and water-related diseases are widespread in rural communities. It must however be emphasised here that the judgement of the people about the perception of water quality on the basis of appearance could be much more ascribed to low level of literacy among the people in the study area.

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

The study identified the demographic characteristics of the sampled respondents (Sogakofe, Fievie and Tordzikpota) who participated in the survey in order to provide basis for authenticating the sources of responses and differentiating between responses, since aggregated responses may exclude some pertinent isolated concerns.

Key Findings

On the first objective of examining the relationship between location of residents and water sources, the study revealed that there is significant relationship between the main sources of water and location of residents. The study further revealed that most of the communities living along the Volta River without access to pipe borne water has no alternative sources of water to depend on except the Volta River. The non-availability of other sources of water was attributed to high salinity of underground water table in addition to dispersed nature of most of the settlements with low population which made connection of these communities to existing water pipe line difficult and capital intensive. On the second objective of assessing level of awareness and knowledge of people about water quality improvement, the study revealed that there was lack of awareness and knowledge on the part of many people about improving water quality in the absence of access to improved water sources. Thus, this led to only few people having little knowledge about water quality improvement through boiling, filtration through cloth, let it stand and settling and finally an addition of chlorine. (I think the second objective should probably be on the reason for the choice of water sources).

Conclusion

The study has succeeded in revealing that, communities living along the Volta River in the South Tongu District continue to be exposed to preventable water related health risks. The main cause of these diseases is attributed to consumption of unsafe water. However, this fundamental cause of the problem is linked to the dispersed nature of the communities with low population densities which pose very difficult challenge for the communities to be connected to the existing pipe lines. Therefore, these communities are denied of access to safe potable water hence, forces the people to depend on water from the polluted Volta River. It has also been identified that, there is non-existence of any effective public awareness and educational campaign strategy among the people about the need to improve water quality as means of avoiding health risks associated with the use of polluted water from the Volta River.

Recommendations

First and foremost, the South Tongu District Assembly together with other stakeholders including NGOs should canvass for resources in order to supply these communities along Volta River with potable water to eliminate the dependence of people on the polluted water. There should be an intensive public awareness and educational campaign, for short and long term on the effects of using unsafe water and disposal of waste in the community. Again, there should be collaboration with stakeholders, Non-Governmental Organisations (NGOs) in South Tongu to roll out an extensive awareness creation and educational campaign on the use of less expensive but very effective and efficient household water treatment methods to improve water quality for use. Furthermore, public education and awareness campaigns should be done through interpersonal communication process which allows people to interact with the promoters of the new water treatment methods face to face. There should be a policy or by-law binding on everyone to treat water. The government should also establish some factories in the area to provide job opportunities for the people in order to reduce over reliance of people on water bodies which serve as contact point for contraction of some diseases. Besides, in every

community, platforms should be mounted at points of fetching water to prevent people from entering or having direct contact with the river body.

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