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Assessment of Water Access, Sanitation and Hygiene Practices in Ghana: A Case Study of Ketu South Municipality

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ABSTRACT: Inadequate access to potable water is a major problem confronting most societies and countries worldwide. The availability to adequate and safe water and the provision of sanitation facilities is widely recognized to help improve public health. In the study area, the Ketu Municipal of Ghana, groundwater (hand-dug-wells and boreholes) is the main source of water supply for domestic use. In view of the dangers associated with contaminated water for consumption hence the objective of the study is to assess water, sanitation, and hygiene practices in Ketu South municipality of Ghana using appropriate standard techniques. From the survey, about 34% of the respondents without household toilet admitted that they go to the seashore to defecate as an alternative source of convenience. About 44% of them had unimproved toilets at home or in their neighbourhood. Besides, 43% of the respondents have uncontrolled refuse dump sited at their backyards whiles 20% open defecation in the bush. Based on the findings, some recommendations are made. These include more public education on environmental sanitation.

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Drinking water or potable water is water of sufficiently high quality that it can be consumed or used without risk of immediate or long-term harm. Unfortunately, over large parts of the world, humans have inadequate access to potable water and use sources contaminated with disease vectors, pathogens or unacceptable levels of dissolved chemicals or suspended solids (Dickin et al 2022). Water and Sanitation therefore becomes one of the primary drivers of public health. It is evident therefore that the provision of water and sanitation facilities are important public health measures that contribute significantly to the reduction in the disease burden of populations. To remain healthy, human beings need an adequate, year-round supply of quality water. However, the issue of improved water supply and sanitation is a major problem affecting most communities in Ghana. Many debilitating or even fatal illnesses are spread by contamination of the water supply with human faecal matter containing disease-causing viruses, bacteria, and parasites. Again, it is an established fact that without water and good sanitation there will be no life of any kind and that, without water readily available in adequate quantity and free of pathogenic organisms, man's progress is tremendously hindered. Although no actual count is possible, billions of man-days of labour are undoubtedly lost annually because of illness and death from water-borne diseases. Unfortunately, the areas which can least afford this economic loss are the places where such sickness and death are most rampant. The government of Ghana, in recognition of this has made great efforts to increase the coverage of drinking water supply and sanitation services. At the same time, despite the undeniable and significant progress made, the situation

of these services continues to be a cause for serious concern in many communities. Hence, the objective of this study is to water, sanitation, and hygiene practices in Ketu South municipality of Ghana. The safe disposal of human excreta is essential for public health protection. The unsafe disposal of excreta is a principal cause in the transmission of pathogens within the environment and improvements in excreta management provide significant reductions in diarrhoeal disease (Balatova et al 2021). According to Khatib et al (2022) where the source of drinking water is an aquifer with a high groundwater table, the risk of contamination from pit latrines needs to be considered. According to Ahiabor and Amoako (2015), water resources at large have little or no protection and management, particularly in the less developed countries lending credence to the fact that water supply issues cannot be sustainably resolved without also providing proper sanitation. Groundwater contributes to local and global disease burdens through the transmission of infectious disease and from chemical hazards. The direct contamination of groundwater sources caused by poor sanitary completion has been linked to both endemic and epidemic disease and in both developed and developing countries. Outbreaks linked to poor sanitary completion have been noted in many countries. For instance, Olson et al. (2002) related an outbreak of E.coli O157:H7 in Alpine, Wyoming, including cases of haemolytic uremic syndrome, to a poorly protected spring which sanitary surveys had identified as being at risk from contamination by surface water. In developing countries, the use of poorly protected groundwater sources has been linked to acute diarrhoeal disease (Berendes et al 2022; Nasinyama et al., 2000). The objective of the study was to quantitatively access and analyse people's knowledge, attitude, and perception on relationship between water, sanitation and hygiene thereby improving public health.

MATERIALS AND METHODS

Visit was paid to the district on 24th March and 5th April, 2021 and this helped a great deal in the selection of sampling points. This is because the visits helped identify the various types of pit latrines (traditional, VIPs etc.) which may impact in one way or the other on the quality of hand dug wells in the district.

All the communities in the five area/urban councils which benefited from water facilities within the district were visited. Further, the area/urban councils were divided into five clusters, namely, Klikor, Some Wego, Some Fugo, Wudoaba/Aflao Wego area councils and Aflao urban council. In all, ten sampling points were identified, with distance from a pit latrine being the major determining factor. Communities involved in the studies were: Dodorkope, Adina, Xedzranawo, Agbogbome, Gavorkope/Gamadzra, Gbugbla and Avedzi/Soviefe**.**

RESULTS AND DISCUSSION

Type of Water Facilities: Water is life and failure to have potable water leads to several public health problems including loss of school days for children and exposing women and children to several social inconveniences in the process of walking long distance in search of water. Information gathered from the respondents shows that hand-dug-well was the most common source of water for domestic use in the study area. As indicated in Table 1, 66% of the respondents noted that hand-dug-wells were the most common type of water facility in their communities. Also 12% obtain mentioned boreholes as the most common water facility while 14% respondents made mention of both hand-dug-wells and boreholes. About 22% and 34% of the respondents noted the nature of the water in the wells were saline and clear respectively (Table 1 and Figure 1). Besides, 14% of the respondents declared that the water in the various facilities was turbid in nature while a further 29% and 54% described the water in the facilities as being saline and clear respectively.

Minimizing faecal pollution of wells and other sources of water must be an integrated approach. Developing sound water resources management programme will be crucial to Ghana's poverty reduction, economic growth, food security and maintenance of natural systems. There is the need for greater community participation in water sanitation management.

Table 1. Type of Water facility and Nature of the water from source

Water Facility	Nature of Water (%)					
	Saline	Clear	Turbid	Clear & Saline	N/A	Total
Borehole	1	8	3	0	0	12
Hand-dug-well	22	34	8	1	1	66
Pipe borne	3	2	1	0	1	7
Borehole and Well	3	9	2	0	0	14
Water tank	0	1	0	0	0	1
Total	29	54	14	1	2	100

Type of Toilet Facilities in Homes/Communities: Household income determines the type of household toilet facility ownership. However, the type of household toilet also determines the level of exposure to human excreta as household toilets can be classified as safe and unsafe. As much as 56% of the respondents admitted that they had toilet facilities in their homes or were sited close to where they live in their community as compared to 44% who noted otherwise. Likewise, those who affirmed that they had places of

convenience in homes or neighborhood mentioned several toilet facilities. These include KVIP (13%), unlined pit latrine (12%) and water closest (2%). The results indicate that modern facilities of places of convenience such as water closest were lacking in or inadequate in the study communities whiles unlined pit latrines could also leach into groundwater precisely wells thereby causing public health threats such as Typhoid and Cholera. Figure 2 indicates the opinion of respondents expressed on the type of toilet facilities available in their homes or neighbourhood.

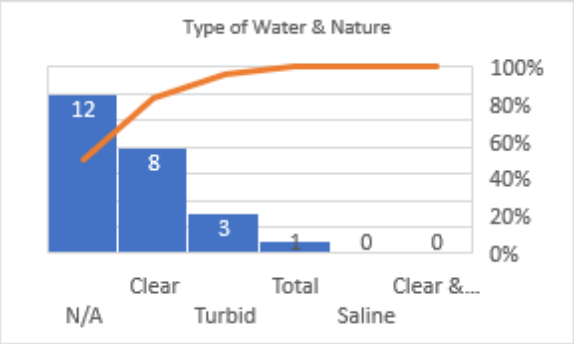


Fig 1: Type of Water facility and Nature of the water from source

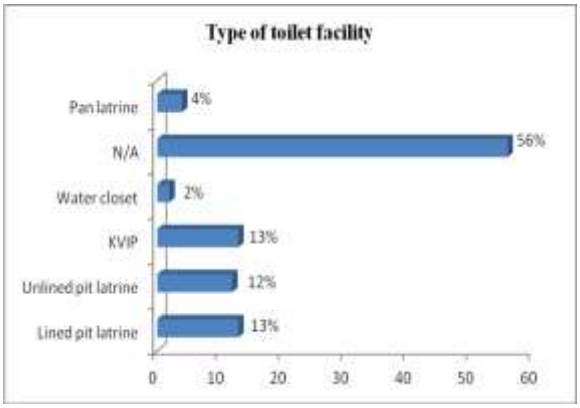


Fig 2. Type of Toilet Facility in Home/Community

Alternative Places of Convenience for Respondents with no toilet facilities at home: For respondents who noted that they had no toilet facility at home or in their immediate neighbourhood, they opted to (20%) use the bush, seashore/beaches (34%) and toilet facilities at the community's school(s) premises (2%). However, this clearly means significant number of people are still doing open defecation despite the adaptation of CLTS Strategy by Ghana Government decades ago. Figure 3 below shows the number of respondents who had toilet facilities in their houses (44%) and for those who lack such a facility attend nature's call. This can cause serious public health threats such as cholera outbreak and other related diseases to the surrounding communities.

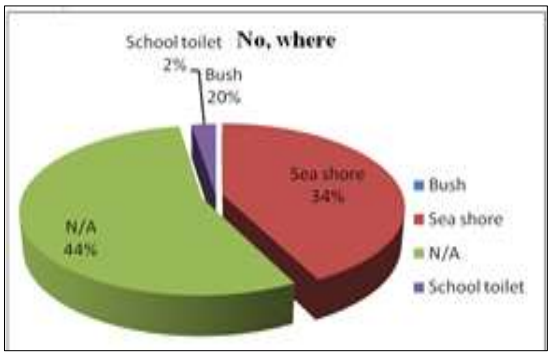


Fig 3. Alternative Places of Convenience for Respondents with no toilet facilities at home.

Possible impacts on short distance between well and toilet on water quality: Only 21% of the respondents gave a possible impact of distance between well and toilet on the quality of water in the well. They contended that the shorter the distance between the toilet facility and the hand-dug-well the higher the risk of getting the well water contaminated with waterborne diseases. The rest of the respondents (79%) however, noted they had no idea on the likely impacts as illustrated in Table 2. This clearly indicates that the Municipal Assembly precisely the Environmental Health and Sanitation Department needs to embark on environmental sanitation education for the people to be empowered to take control over their own health.

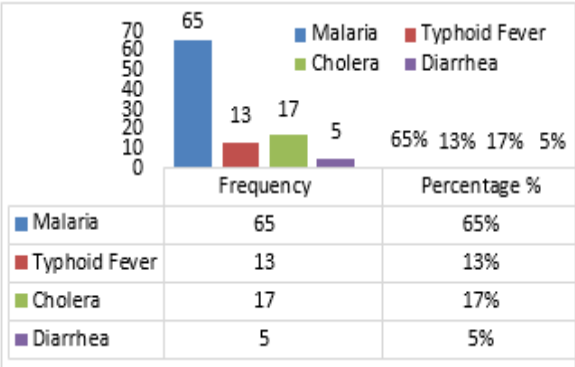
Table 2. Possible impacts on short distance between well and toilet on water quality

Responses	Frequency	Percentage %
No Idea	79	79%
Waterborne Diseases	21	21%
Total	**100**	**100%**

Relationship between human excreta and water for consumption: Information gathered from the respondents indicates their level of awareness that drinking water source should be kept far away from human excreta to limit ground water contamination. As much as 82% noted that there exists a negative relationship between groundwater/water for human or use by animals and human excreta if they are found close to each other. They mentioned that short distances tend to promote contamination of water bodies. Only 1% noted that there was no relationship between groundwater/drinking water and human excreta. Seventeen percent (17%) were however, undecided on the nature of the relationship. Figure 5 illustrates the opinion of respondents on the relationship between groundwater/drinking water and human excreta.

Public Health problems associated with improper disposal of waste: Improper disposal of human excreta

is usually associated with various health problems. The respondents mentioned several water-borne diseases that could probably result from the improper disposal of human excreta. These included Malaria, Typhoid fever, Cholera, and Diarrhoea. About 65%, 13%, 17% and 5% of the respondents enumerated Malaria, Typhoid fever, Cholera, and Diarrhoea respectively as diseases that could occur if human excreta are not disposed off properly. Besides, 17% noted poor disposal of human excreta could risk the outbreak of cholera and diarrhoea. Figure 4 below graphically further explains their opinions.



	Frequency	Percentage %
Malaria	65	65%
Typhoid Fever	13	13%
Cholera	17	17%
Diarrhea	5	5%

Fig 4: Public Health problems associated with improper disposal of waste. Availability of refuse dumps in backyard

Household waste of any kind should be hygienically managed to protect the health of the people, but the practice seems to be a threat to the environment which is one the major practices in Ghana. This is evidential in figure 7 where 57% of the respondents admitted having no open refuse disposal sites in backyard while 43% on the other hand noted that they had open refuse dump sites in their backyards. This trend is worrying considering the possible public health hazards this unhygienic practice may cause to the people as the result of using backyards as refuse dumping sites which automatically becomes the breeding site of houseflies' thereby transmitting typhoid and other feaco-oral diseases.

Place of Refuse Disposal for Domestic waste: Respondent who noted that they had no open refuse dump sites in their communities mentioned several alternative venues where they disposed off their household refuse. About 9% and 4% disposed off their refuse in an un-engineered landfills (sand pits and pits dug for the purpose of disposing off waste) and backyards respectively. A further 10% used communal refuse containers while 17% dumped their household refuse in the farms. Figure 5 illustrate the views of respondents on where they dispose off their domestic.

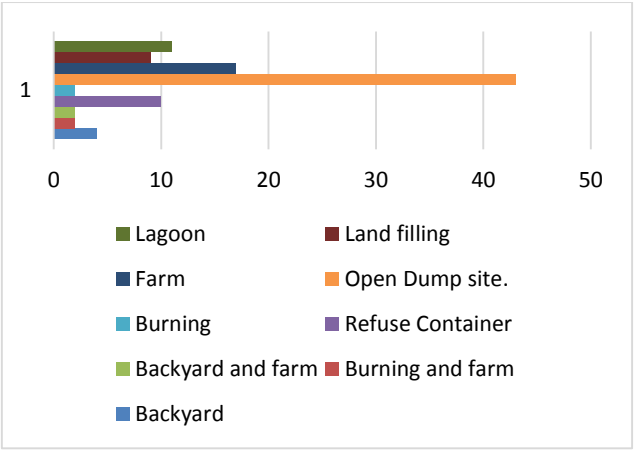


Fig 5: Place of Refuse Disposal for Domestic waste

Proximity to Dumping Sites: With respect to the issue of proximity of dump site to well/borehole facilities in the study area, 63% of the respondents said the distance was above 100 metres. About 6% however, noted that the distance was no more than 100 metres while another 31% was unable to estimate the distance between their refuse dump site and wells/boreholes in their communities as shown in Table 3.

Table 3: Distance between hand-dug well and dump site

Responses	Frequency	Percentage %
Above 100m	63	63%
Below 100m	6	6%
No Idea	31	31%
Total	**100**	**100%**

Possibility of negative impact of short distances between wells and dumping sites: Healthwise, 23% respondents were of the view that a short distance between the well/borehole facilities could pose negative health impact on the consumers who depend on the affected water facilities. On the other hand, as much as 72% had an opposing opinion on distance between water facility and well/borehole. Only 5% could not affirm their stance on the possibility of short distance having any negative impact on health as shown in Table 4 below.

Table 4. Possibility of negative impact of short distances between wells and dumping sites

Responses	Frequency	Percentage %
Yes	23	23%
No	72	72%
No Idea	5	5%
Total	**100**	**100%**

Conclusion: It is obvious that Water, Sanitation and Hygiene (WASH) practices in the study areas are not encouraging despite the intervention of some local and international NGOs to improve upon WASH practices in these areas. The study revealed insanitary condition and that the hand dug-well water throughout the period

was polluted with faecal matter. The high levels could be attributed to anthropogenic factors, such as sewage from nearby pit latrines.

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