

Water Supply, Sanitation and Their Effects on the Health Status of the People of Chorkor in the Ablekuma Sub-Metro of the Accra Metropolitan Assembly

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ABSTRACT

Water supply and sanitation issues are very crucial and have profound impact on the health of all people irrespective of their race, social, economic and political status. This is because adequate supply of water, proper sanitation and hygiene education improves the quality of life. However, most communities in the developing world, especially urban and peri-urban areas, do not have access to water in quantities and qualities that will improve their health. The absence of sanitation facilities, poverty, improper planning and high morbidity are common in these areas. The study examined the sources of water supply to five suburbs of Chorkor, determined the physical, chemical and microbiological qualities of such waters to ensure that Ghana standards and the WHO guideline values had not been compromised. Additionally general sanitation conditions in the five suburbs were examined and the implications on the health of the people determined.

The analysis revealed that, Physical and Chemical parameters of most of the water sources in the community were within the WHO guideline values and Ghana standards with few sources having values that were quite high. All the parameters from physical and chemical indicated clear seasonal variation at all the sampling points except the total suspended solids where all the values recorded during the entire project period was below 1.00mg/l. The wet season values recorded for most of the parameters were higher than the dry season. However, temperature and total alkalinity recorded higher values for the dry season respectively. The values recorded for all the parameters were quite high but within the WHO guidelines and Ghana standard limits for potable water for domestic consumption without any potential health implications. Nitrate and phosphorus showed marked seasonal variation. The mean seasonal values for phosphorus ranged between 0.11 – 0.181mg/l whereas the range for nitrate was 0.072 – 0.100mg/l, for both dry and wet seasons. In each case the wet season value was higher than the dry season. The mean seasonal concentrations of cations were within the WHO guideline values and Ghana standards for potable water. Those tested were chloride, fluoride and sulphate. The mean seasonal concentrations were in the range of 39.5 –

45.2mg/l for chloride and 35.9 – 48.1mg/l for sulphate. The concentrations of anions were within the WHO guideline limit and Ghana standards of (250mg/l, 400mg/l, 250mg/l and 1.5mg/l) for chloride, sulphate and fluoride, respectively.

Microbiological parameters of the water sources far exceeded the WHO guideline values and Ghana standards of permissible limits of total coliform, faecal coliform and total heterotrophic bacteria for potable water. Total coliform, faecal coliform and total heterotrophic bacteria were very high and showed significant seasonal variation in all the samples collected where the wet season recorded higher population than the dry season. However, the dry season population for faecal coliform did not show significant difference. The mean seasonal populations were in the range of 356 – 458 cfuml⁻², 178 – 317 cfuml⁻² and 935 – 1305 cfuml⁻¹ for total coliform, faecal coliform and total heterotrophic bacteria respectively. These populations far exceeded the WHO and Ghana recommended limits of 0 cfuml⁻². It was established that leakage of burst pipes, general layout of distribution lines through wastewater channels, and illegal connections were responsible for the presence of high population of pathogenic bacteria such as *Escherichia coli*.

General sanitation was very poor in the study area with its attendant implications on public health including prevalence of water related diseases such as malaria, cholera and typhoid. The health report from the Ablekuma Sub-metro health directorate and the Mamprobi Polyclinic for Chorkor indicated persistent increase in water-borne and water related diseases. In 2007, 19308 malaria cases representing 59% were reported and this increased to 30158 representing 68% in 2008. This further increased to 31400 representing 64% in 2009. Diarrhoea diseases also experienced a steady increase, for instance in 2007, 1538 cases representing 4.7% were reported and this increased to 1804 representing 4% in 2008. In 2009, diarrhoea cases further increased to 4850 representing 10%. There was no significant difference at ($p < 0.05$) for most of the parameters examined for both seasons even though the values recorded were high especially the bacteriological parameters. Generally, the wet season values and population were higher than the dry season.

Some recommendations made in order to ameliorate the perennial water supply and sanitation menace in Chorkor to improve their health status include; public education on attitudinal change towards sanitation and hygiene practices. Regular sanitary inspection by the sub-metropolitan authorities to keep Chorkor clean and boiling of water before drinking. There should be regular monitoring of the distribution lines of the Ghana Water Company and its

operating agencies for burst and leaking pipes using state of the art technology such as Geographic Information Systems. Aged distribution pipe lines should also be changed especially iron pipes to reduce future increase in the concentration of iron as a result of rusting. Illegal connections should be checked since the study revealed a lot of such practices which turn to serve as entry points for disease causing pathogens. There should be provision of more public bins at designated locations and regular disposal to prevent or minimize the overflows that normally characterized the public garbage bins. The Accra Metropolitan Assembly should build modern public places of convenience for the community to ease the pressure on the existing ones so that open defecation can be minimized if not totally prevented.

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