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# The sanitation situation of Rimuka high density suburb, Kadoma, Zimbabwe.

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***Abstract:*** *The article examined the sanitation situation of Rimuka high density suburb in Kadoma, Zimbabwe. For data collection, both primary and secondary data sources were consulted. Purposive and systematic sampling techniques were used; to select key informants from Kadoma City Council departments and for the selection of housing units for questionnaires administration, respectively. Main types of sanitation facilities identified in Rimuka were Pour-flush, Pit and Flush latrines. The study revealed that most sanitation facilities were exposing residents to diarrhoeal disease hazards. Strategies used by Kadoma City Council (KCC) in dealing with sanitation challenges were desludging of filled toilets, cleaning toilets and installation of water tanks in the residential area. However nothing was done in terms of provision of new sanitation facilities. The study brought to light that the failure of KCC to support sanitation service delivery was attributed to financial constraints which also translated into limited manpower. It is therefore recommended that KCC constructs new and modern sanitation facilities for residents in order to increase residents' safety and dignity. The endeavour to provide new sanitation facilities must also leverage for more Public-Private Partnerships in order to enable financial capacity.*

***Keywords:*** *sanitation facilities, capacity, situation, high density, Kadoma*

## I. Introduction

Globally, several nations are failing to provide adequate sanitation facilities for their citizens, and the situation is most prominent in developing nations. According to Water Aid (2011), half of the population in developing countries do not have access to a basic toilet. According to WHO and UNICEF (2015) current trends show sub-Saharan Africa and Southern Asia still struggle with low sanitation coverage. In sub-Saharan Africa, 44 per cent of the population uses either shared or unimproved facilities, and an estimated 26 per cent practices open defecation while in Southern Asia, the proportion of the population using shared or unimproved facilities has declined to 18 per cent but open defecation remains the highest of any region (39 per cent)

Developing nations are contributing a significant number of people who still need attention in the sanitation discourse. According to Asian Development Bank (2014), only 40 percent of houses in South Tawara, India have access to improved sanitation facilities such as flush toilets connected to the public sewage system. The country's urban sanitation coverage is 50 percent As a result of poor sanitation conditions in India, waterborne diseases such as diarrhoea are the major killers of children under the age of five. WHO (2015) stated that 64 percent of those without access to improved sanitation in South Asia still practice open defecation, compared to 33 percent in Sub-Sahara Africa and 18 percent in Oceania.

Turning to the Kenyan situation, the 2006 Human Development report stated that two in every three people in Kibera, Kenya regard flying toilets as primary mode of excreta disposal. Kibera's residents defecate in plastic bags and then throw them in ditches (Mulenga 2011).

Literature indicates that provision of adequate sanitation facilities is still a major challenge in Africa. Hawkins et al (2013) also stated that, one of the major development challenges that the majority of African countries face is that of providing safe sanitation services in both urban and rural areas. African Development Bank group (2011), stated that countries such as Benin, Burkina Faso, Ghana, Madagascar, Togo, Chad, Niger, Sierra Leone, Ethiopia and Eritrea remained with sanitation coverage of less than 15 percent. Poor sanitation conditions in most African cities, coupled with growing human population are leading to quick spread of waterborne diseases such as cholera, diarrhoea and typhoid. Water Aid (2011) stated that diseases attributed to poor sanitation currently kill more children than AIDS, malaria and measles put together and diarrhoea is the biggest killer of children in Africa. Although access to toilets is generally higher in urban than in rural areas, sanitation conditions for poor people in urban areas are aggravated by high-density living, inadequate seepage and poor drainage (Hawkins et al 2013).

There are intrinsic inequalities in access to sanitation facilities between the rich and the poor people, even in the same country. Poor people usually but not always live in high density residential areas whilst rich people live in low density residential areas. According to Mulenga (2011), access to adequate sanitation is generally a challenge in most urban poor communities in Africa and Asia due to poor service provision by sanitation agencies, dense population and limited availability of land to build new latrines when the old ones are

filled. According to WHO (2015), the differences in coverage between the rich and the poor appear to be greater for sanitation than drinking water.

Narrowing to Zimbabwe, most cities and towns sanitation infrastructure were built during the colonial era when population was less than the unprecedented millennium era growth. Banana et al. (2015) stated that in Mutapa a residential area in Chinhoyi, there are two communal toilets which were initially designed to accommodate 60 people but the toilet facilities are now used by more than 300 people. An increase of population in Mutapa increased the frequency of toilet blockage. Rapid urbanisation in most Zimbabwean cities has put pressure on sanitation facilities. The population increase has exceeded the carrying capacity of sewer pipes and this resulted in bursting of sewer pipes especially in high density residential areas. According to Tanyanyiwa and Mutungamiriri (2011), Dzivarasekwa 1 was designed for fewer people but currently the sewer pipes carrying capacity is being exceeded due to present high population. Exposure to the flowing sewer increases the probability of conducting water borne diseases. According to Banana et al. (2015), from August 2008 to July 2009, Zimbabwe experienced the worst cholera outbreak which had not been recorded in the history of Africa for the past 15 years. A total of 50 815 suspected cases of cholera were reported and 4 276 of these cases were fatal (Banana et al. 2015). Kadoma City experienced a cholera outbreak in 2008-9, affecting 6,393 people, (Maponga et al 2015). According to Maponga et al (2015), Rimuka residents constituted 80% of the Kadoma cases during the 2008-9 cholera outbreak. This is a high percentage that indicates an existence of a problem in Rimuka. However little has been documented on the sanitation conditions of Rimuka high density residential area. Previous studies rendered attention to water supply aspects leaving out sanitation issues. It is against the background that the researchers assessed the Rimuka, Kadoma sanitation situation in order to reveal the nature and state of provided facilities, potential safety and health impacts as well as the strategies devised to deal with the sanitation challenges.

**Area of Study**

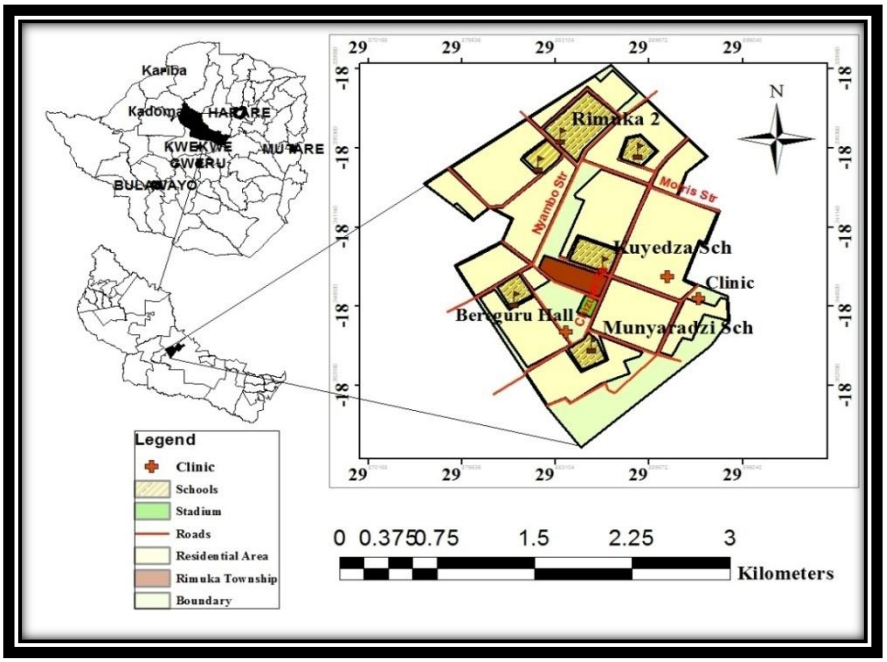


**Figure 1.1: Study area**

## II. Methodology

The target population for this study were all residents of two sections of Rimuka high density suburb, namely the SQ/GB (Single Quarters/General Block) and Old Rimuka sections. The reason for selecting these two sections was that the two sections had observable sewer backlogs. These two sections had a total of 1284 housing units.

Systematic sampling was used to select the houses for questionnaire administration in Rimuka sections. According to Yount (2006), systematic sampling is one in which every $K^{th}$ subject on a list is selected for inclusion in the sample. The "K" is the sampling interval. This technique involves a random start and then picking every $K^{th}$ house. In order to get the interval among houses, the total number of houses in each section were divided by sample size to get an interval of 10 houses in each section, that is for SQ/GB (941/94=10) and for old Rimuka (343/34=10). The questionnaires were self-administered to make sure that the researchers were

available to explain to the respondents where they needed assistance. The questionnaire administration process took place simultaneously with direct observations. .

Purposive sampling was also used to select individuals with authenticated and accurate information about the study. This method was used to select key informants from Kadoma City Council; the Director of Engineering Department, Director of Environmental Health Services and the Director of Finance. Sister in charge for Rimuka clinic was also selected as a key informant in order to obtain data about the safety and health impacts of the sanitation situation. Direct observations were also highly instrumental for the study.

**Table 1.1: Sample size determination**

| Section | Total number of housing units | Sample size | Percentage (%) |
|---|---|---|---|
| SQ/BG | 941 | 94 | 10 |
| Old Rimuka | 343 | 34 | 10 |
| Total | 1284 | 128 | |

**Table 1.2: Justification of Key informants to whom interviews were conducted**

| **Number of respondents** | **Interviewee** | **Department** | **Purpose/Justification** |
|---|---|---|---|
| 1 | Director of Environmental Health Services | Environmental Health Services | To obtain data about the strategies which were in place to reduce safety and health impacts of poor sanitation conditions in Rimuka high density suburb. |
| 1 | Rimuka clinic Sister in charge | Environmental Health services | To get data about sanitation related diseases over the past years. |
| 1 | Director of Finance | Finance | To get data about the KCC budget towards improvement of sanitation in Rimuka high density suburb. |

## III. Results and Discussion

**Response Rate**

**Table 4.1: Showing the response rate of questionnaires by respondents**

| Questionnaires administered | Returned | Response Rate (%) |
|---|---|---|
| 128 | 104 | 81.25 |

Questionnaires were administered to 128 systematically selected residents of Old Rimuka and SQ/GB sections of Rimuka high density residential suburb. Both males and females participated in this research with women having a proportion of 55% and males 45%. Returned questionnaires were 104, leading to a response rate of 81.25%. When the response rate is between 75% and 100% the results are qualified as reliable for the survey (Dorney 2007)

**Types and nature of toilets available in Rimuka**

There were three main types of toilet facilities used in Rimuka. These were pour-flush, pit and flush latrines, represented by 52%, 28% and 20% respectively.

**Pour flush latrines**

**Plate4.1: Outward appearance of a Pour flush latrine in Rimuka SQ/GB**

**Plate4.2: Inward appearance of a Pour-flush latrine in Rimuka SQ/GB**

The majority of the research respondents (52%) were

using Pour-flush latrines which were owned by the city council. The facilities were old and connected to septic tanks. Moreover, the water system of most of the facilities were dysfunctional, as a result the Pour-flush pans were filled with excreta as shown on plate 4.2. These poor sanitation conditions attracted flies which could be observed from in and around the toilets. Flies are transmitters of disease causing pathogens (WHO 1991), hence Rimuka residents were exposed to a serious health hazard as a result of the state of some their toilets.

Pour-flush toilets were shared among the community members and general care and maintenance of the facilities was very poor and difficult to manage. The walls of the toilets were smeared with faecal matter and this posed a big health hazard to the residents. According to WHO standards, shared sanitation facilities are classified under unimproved sanitation facilities because they pose a health hazard to users. More than 50% of the respondents were using unimproved sanitation facilities. None of the residents who were using pour flush toilets rated their facilities as very good or good, 13% rated them as bad and 87% rated them as very bad.

**Pit Latrine**

Pit latrines were used by 28% of the respondents. These toilets were old, showing no evidence of recent upgrading (plate 4.3) and they were abused by the users who failed to properly dispose of excreta into the squat holes. Similar to the pour flush latrines, pit latrines were shared among the community. These toilet facilities produced unpleasant smell and had no vent pipes to reduce odour. When rating the state of the pit latrines, none of the residents rated them as very good, only 10% rated them as good, 76% as bad and 14% rated them as very bad. Pit latrines were rated on the bad side by 90%. For the 10% who rated them as good, their only reason because they were comparing them with Pour-flush toilets.

**Plate4.3: Pit latrine**

**Flush toilets**

Only 20% of the survey respondents were using flush toilets connected to convectional water system. This supports the view of Mulenga (2011) who stated that cities in both Asia and Africa are not fully served by convectional sewage system because it is expensive. Most of the flush toilets were in good condition. On rating the state of the facilities 17% rated them as very good, 69% as good, 14% as bad and none rated the as very bad. Only 14% of the respondents rated flush toilets as bad due to water cuts.

**Potential safety and health impacts of poor sanitation**

Sanitation facilities used in Rimuka were compromising the safety and largely the health of Rimuka residents. The researchers observed that residents were exposed to risks of conducting sanitation related diseases since their sanitation facilities were not disposing of human waste immediately and they were also producing unpleasant odours. Toilet facilities were inaccessible because of human waste which was improperly disposed of and the situation forced residents to resort to open defecation. Open defecation have serious safety and health impacts as it allows disease transmitters to have access to both human waste and food as well as exposing residents to several dangers as they take their trips to the bushes In addition stagnant waste water was observed in the toilets, creating conducive environment for the breeding space for mosquitoes and flies (Plate 4.4). Swarms of flies were observed in the toilets. Flies were attracted by human excreta and they were jeopardising the safety and health of Rimuka residents. According to Keiding (1986) the diseases that flies can transmit include enteric infections (such as dysentery, diarrhoea, typhoid, cholera and certain helminth infections), eye

infections (such as trachoma and epidemic conjunctivitis). Also observed was the absence of hand washing facilities in and near the toilets, creating possibility of oral-route transmission of faecal contamination.

**Plate3.4: Pour flush latrine promoting breeding space for flies and mosquitoes**

**Existing Sanitation related diseases in Rimuka high density suburb**

Rimuka residents and the local clinic authority cited diarrhoea as the most common sanitation related disease in Rimuka. About 65% percent of the respondents confirmed that at least one member of their families had suffered from diarrhoea between the year 2011 and September 2015 (Figure 4.3). Ninety one percent of the questionnaire respondents indicated that diarrhoea was most common amongst young children. The local clinic authority also concurred that children under 5 years were mostly prone to diarrhoea in the area. Occasionally typhoid outbreaks were experienced in Rimuka, and only 9% of the respondents revealed that at least one member of their family had suffered from typhoid. 11% of the respondents pointed out that they had contracted other diseases, dysentery being one of them. However, diarrhoea proved to be the most problematic sanitation related disease in Rimuka high density residential area as shown in figure1.2

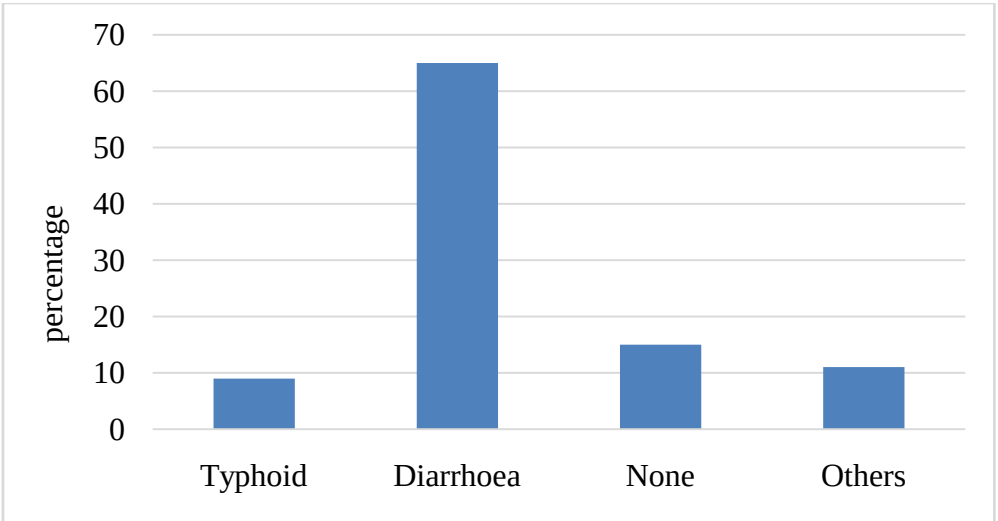


**Figure 1.2: Sanitation related diseases in Rimuka**

**Strategies devised to combat sanitation challenges in Rimuka**

## IV. Environmental education

Kadoma City Council (KCC) pointed out that through its Environmental Health Officers (EHOs) conducted Environmental education in Rimuka on a monthly basis. The role of EHOs was to raise awareness on the consequences of unhygienic behaviour and promote hygiene. However none of the residents pointed out that they were receiving any environmental education from the city council EHOs.

**Water storage Tanks**

The city council installed water tanks in both SQ/GB and Old Rimuka sections. The whole community accessed water from the tanks. The provision of clean water acted as a 'secondary barrier' to transmission of sanitation related diseases. However it was observed that there was absence of properly prepared water collection and hand washing points; as a result the surrounding areas were damp and unhygienic.

**Desludging of full toilets**

Kadoma City Council desludged full pit latrines and septic tanks. However, 89% of the respondents indicated that they were not satisfied by the strategy, they were actually advocating for the destruction of the existing toilet facilities and the construction of new ones and preferably flush toilets.

**Cleaning Services**

Respondents also revealed that sometimes city council workers cleaned the Pit latrines and Pour-flush toilets which were shared amongst the community. They pointed out that the cleaning efforts were not very effective and sustainable as the toilets would always get back to their usual bad state. This was because the facilities were shared among a large number of people who lacked sense of ownership.

**Financial capacity of Kadoma City Council to solve sanitation challenges**

The study revealed that the major sources of finance for Kadoma City Council were rates/ supplementary charges, sewage fees, water charges, public lighting, rentals, market fees and parking fees. These sources of finance were proving to be unreliable due to national economic hardships. A study carried out in the city of Gweru also asserted that high rate of unemployment of Gweru residents had resulted in their incapacitation to pay for water bills, despite their willingness to pay (Kusena and Beckedahl 2014). Therefore, collected revenue was not sufficient to support service delivery in full. It was revealed that Kadoma City Council needed to collect about 75% of the bills in order to entirely meet its service delivery needs. Through information from key informants, the study made known that KCC collected less than 40% of the bills, translating into financial incapacitation of the service provider. Over the past 5 years (from 2010) the city council envisaged to spend $ 3 million on sanitation but ended up spending $ 100 000 only.

## V. Conclusions

Rimuka high density suburb experienced very poor sanitation conditions. More than 80% of the residents were using unimproved sanitation facilities because they were shared. The available facilities were not clean and created a health hazard to the residents, particularly those who were using Pour-flush and Pit latrines. The strategies implemented by Kadoma City Council to deal with sanitation challenges included installation of water tanks, desludging filled latrines and toilet cleaning. Inasmuch as these strategies were necessary and potentially effective, financial incapacity of the local authority made it very difficult to sustainably maintain the strategies, partially due to shortage of manpower. Upgrading of the sanitation facilities for human dignity remained has proven to be a very difficult avenue that has remained neglected. Although operating with a stringent budget, it is imperative that Kadoma City Council builds new latrines which will cater for people at household level. In order to solve financial problems the city council should welcome more Non-Governmental Organisations and Public-Private Partnerships to assist them solve sanitation problems in Rimuka high density residential area.

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