



Original Article

Control of Diarrhoeal Diseases in Children in Kericho West Sub-County, Kenya

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01 May 2020 Acute diarrheal disease among children aged less than five years remains a significant cause of morbidity and mortality worldwide. Severe infectious diarrhoea in children occurs most frequently under circumstances of poor environmental sanitation and hygiene, inadequate water supplies and poverty. In

Keywords: Diarrhoeal, Disease Control, Sanitation, Hygiene, Breastfeeding, Kericho.

Kenya, the control of diarrhoea disease including the promotion of breastfeeding, oral rehydration therapy and specific health education is a part of national strategies aimed to improve the quality of life and reduce the burdens caused by diseases. In Kericho West Sub-County, diseases associated with contaminated water, sanitation and poor hygiene tend to affect more in rural households. Nearly half of the children under five years suffer from related diarrhoeal diseases, thereby causing major concern to the entire local population. Therefore, this study aimed to determine the factors that lead to diarrhoeal diseases, to investigate the hygienic condition and source of water supply in the area, to examine the practices of the breastfeeding mothers and to determine the measures the county government has put in place to improve the health situation of the children. The study was grounded on two theories proposed by self-efficacy theory by Bandura. The study was carried out using a structured questionnaire as a quantitative tool while the interview guide was the qualitative tool for data collection. The location of the study was in Kericho West sub-county. The study concluded that there was a relationship between childhood diarrhoea, water, sanitation and hygiene in the study area. The study also found that there was a substantial positive association between breastfeeding and diarrhoea in children aged less than five years. From the findings, 83% used water with soap, while 41.3% obtained food from street vendors. The study recommends that the government facilities and private

facilities should start sensitizing the Kericho West sub-county residents on the importance of maintaining hygiene through the use of clean and treated water as well as washing their utensils with hot water and soap. The government health care workers at the government facilities should counsel all the mothers and educate them on all the waterborne diseases as this would be the best option to control the communicable diseases in the County.

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INTRODUCTION

According to Ojewumi and Ojewumi (2012), diarrhoea prevalence continues to be alarming in Sub-Saharan Africa as a leading killer disease responsible for high morbidity and mortality, especially to children under the age of 5 years. This is especially so because of the region unique geographic, prevailing economic climate and poor health personnel and facilities as well as socio-cultural factors. For this reason, though epidemiological statistics would have been expected to report a declining prevalence of diarrhoea from high rates of 30 to 50% worldwide, the case of sub-Saharan Africa continues to escalate with the rate as high as four mortality in a population of 10 households (Ejemot-Nwadiaro *et al.*, 2015). In the same vein, it is important to prompt a query on what could be the main cause of diarrhoea in this part of Africa making the region to be so vulnerable unlike other regions in Africa such as South or North Africa.

Inductive research by Ejemot-Nwadiaro *et al.* (2015) noted that socioeconomic factors are the

leading cause of the high prevalence of diarrhoea rather than cultural or geographic factors. The study established that the most devastating cause of diarrhoea as faecal, as the chief route of propagation of the menace. This is supported by a scientific background of the study which indicates that among the widest variant of pathogens indicates diarrhoea are species of bacteria, viral and protozoa that mainly emanate from the pathogens excreted from faeces which can be from humans or animals. Among the most important of these are *Escherichia coli* (*E. coli*), *Salmonella*, *Shigella*, *Campylobacter jejuni*, *Vibrio cholera*, Rotavirus, Nor virus, *Giardia lamblia*, *Cryptosporidium* and *Entamoeba histolytica* (WHO, 2009).

From a global perspective, it is imperative to know that diarrhoea is a major challenge across the universe. According to World Health Organization and UNICEF report of 2015 benchmarking of the global risk of diarrhoea showed that despite being a manageable disease, every year, the incidences of diarrhoea are in the range of 2 billion to 2.5 billion, about a quarter of the world population. Over 18.0% of the incidences are accounted for by children of the age of 5 years and below who most

of them end up dying. When examined from different dimensions, this agrees with the WHO report in 2017 that more than 5,000 children die every day as a result of diarrhoeal disease worldwide and this is by a large extent in Africa.

Similarly, according to Schmidt and Cairncross (2009), it has been established that even though there is a high prevalence of diarrhoea amongst children under the age of 5 years seems in Africa, there are also serious incidences in Southeast Asian Countries which include Indonesia, Thailand, India, and Burma as well as in Latin America Nation. One study in Brazil established that the socioeconomic status of households seemed to be the biggest predictors of diarrhoea. Children aged under five years were found to be most affected especially twice the incidences were in households with a low economic background than the high economic background even though living as neighbors within the same localities (Moraes *et al.*, 2003)

Similar sentiments are expressed by Emch, Yunus, Escamilla, Feldacker and Ali (2010) and Clasen *et al.* (2012) who in different studies, one in Bangladesh and Haiti together with the Dominica Republic confirmed earlier report that households' socio-economic status (SES) rather than geographic and cultural factors explain incidences of diarrhoea more than the later. Even though the two acknowledge that though the global estimates of the incidences of diarrhoea continue to decrease from 5 Million in the 1980s and 1990s to 2.5 million in 2000s and currently at 2 million, the statistics are general overview with incidences being across countries and regions.

According to Emch *et al.* (2010) and Clasen *et al.* (2012), in spite of the reduction of poverty and increased innovation and advancement of health management from both curative and prevention approaches, the recent promotion of oral rehydration therapy (ORT) by individual countries all over the world in retrospect diarrhoeal disease continues to be considered amongst five major killers of infants and children who are below five years.

According to Kericho County Health Department which is a devolved sector just like other counties across the country and especially in Kericho West

Sub-County, diarrhoea is recognized as among the top three leading causes of cases of out-patients proceeding malaria and poor diet which currently account to 16% of mortality of children aged under five years. This as elucidated by County Ministry of Health simply means that more than 80% of outpatients attendance is preventable and in an apparent reference to challenge which is manageable. The cases are by 100% caused by poor sanitation, water pollution and behaviours like eating without washing hands (Orora, 2013).

Successful research so far indicates that diarrheal disease in different parts of the world and especially in Sub-Saharan Africa continues to be a cause of concern. This has been established by different health and population statistics which offer very valuable insights into the current health status of people when correlated to other factors such as cultural, economic and social aspects of populations; this is more on the case of Kenya.

In Kericho West Sub-County, diseases associated with water pollution and the general hygiene of population affect more rural households. Shocking statistics indicate that in the range of half to above of infants and children who are below the age of 5 suffer from diarrhoeal related diseases, thereby causing a major concern for the entire local population (Orora, 2013). The implied population, unfortunately, is not informed of the profound effects and what can be the outcome of these worsening situations. In a deeper sense, records in the County indicate a bleak future of the entire Sub-County if this problem is not addressed. It is for this reason that the researchers took as an initiative to conduct research on this critical health issue.

SELF-EFFICACY THEORY

Self-efficacy theory by Bandura (1977) derives from a social cognitive theory that calls for behavioural change to enhance a personal sense of control and autonomy. It emphasizes self-efficacy, perception of oneself in being capable of performing certain actions to attain the desired outcome. The basis of this theory is that when people undertake initiatives to find a solution by themselves, they feel more inclined to take even more steps to solve such problems with more zeal and motivation. This theory makes a clarion call to

communities to solve challenges connected with issues at hand with reference to poor sanitation, causing diarrhoeal amongst children under the age of 5 years. It also prompts for effective inward-looking of solutions to the problem affecting the population without undermining solutions. The notable evidence shows that poor perception of the outcome of actions can be fatal hence perceived self-efficacy pertains to personal action control or agency (Wallston, 1992). In this case, it is expected that societies that will incentivize themselves to undertake measures to avert a problem would be more determined to address the problem to the finality

Based on self-efficacy theory, health-promoting behaviours may include hygiene practices related to water cleanliness, cleanliness of the surroundings of public standpipes, and storage tanks private household vendors, handling food, sanitation healthy breastfeeding practices require behaviour changes within a community.

A large body of research has examined the implications of optimistic self-efficiency beliefs as a predictor of behaviour change in the health paradigm (Maddux, & Stanley, 1986). Behavioural change goals exert an effect through optimistic self-confidence beliefs. These beliefs emphasize on perceived coping capabilities rather than simply reflect the existing ones. Therefore, expectancies of self-efficacy theory play an influential role in adopting good health behaviours, eliminating detrimental habits, and maintaining change. The researchers identify it as an engaging theory that can influence the practice of many in the implied population for better preventive behaviours, such as administration of self-breast examinations (Jirojwong & MacLennan, 2003). Self-efficacy is crucial in both stages of the self-regulation of health behaviour. It is all about the positive attitude which encourages the decisions to change one's behaviour for a better outcome in regard to personal involvement with the problems affecting children aged less than five years.

RESEARCH METHODOLOGY

The research adopted a case study research design which is one in which information is collected without changing the environment. This is precisely

because the study opted for spatial variation and temporal trends of diarrhoeal diseases as a phenomenon within a specified and limited location (Kericho West Sub-County). The purpose was to study in detail the nature and the causes of this phenomenon, including its effects on the local population. This allows for an inclusive assessment of diarrhoeal diseases of children less than five years of age, thereby indicating possible solutions to the problem of the study.

Sampling and Sampling Techniques

There are various strategies for determining sample size such as: using a census for a small population, use of sample size for a similar study, use of published tables and calculative method. Stratified sampling was used to divide the data into strata, and then in selecting the sample size, random sampling was employed from each stratum. To determine the size, Krejcie and Morgan (1970) sampling method were used. A portion of the sample size was computed; this proportion was used to determine the number of items in each stratum to be examined. The sample size was 264 respondents, comprised of 251 household heads and 13 medical personnel.

Sampling Procedures

The researchers opted for stratified sampling technique for the purpose of allotting the units for the study (Brewer, 1999). In the case of this study, parents (household heads) were randomly sampled from every third household to participate until the desired sample size of 251 households was obtained, as indicated in the table above. For medical personnel, purposive sampling procedures were used basically for credibility and efficiency purposes and not mere population representation and generalization. It also allows other sampling procedures to be used, for example, the selection of specialized people in the area. Purposive sampling for medical personnel was also used because the implied information fulfils criteria of the knowledge of the problem of diarrhoeal diseases. To realize its credibility and efficiency, this was done to obtain the sample size of 13.

DISCUSSION OF RESEARCH FINDINGS

A total of 252 out of 264 respondents took part in the account 95.5% of the sample size. According to Mugenda and Mugenda (2003), a response rate of 50% is adequate for analysis and reporting, 60% is

good, and a response rate of 70% and over is excellent, and thus for this study, the response was excellent thereby ensuring good coverage of the respondents. The findings are presented in percentages and frequency distributions, as expressed in the subsequent tables.

Table 1: Social Demographic characteristics of the respondents

Characteristics		Frequency	Percentage (%)
Age Bracket	Less than 25 years	14	5.6
	Between 26-30 years	44	17.5
	Between 31-35 years	89	35.3
	Between 36-40 years	70	27.8
	More than 41 years	35	13.9
Gender	Male	86	34.1
	Female	166	65.9
Education level	Primary education	27	10.7
	Secondary Education	73	29.0
	College education	91	36.1
	University education	51	20.2
	Postgraduate education	10	4.0
Marital Status	Single	62	24.6
	Married	172	68.3
	Separated/Divorced/Widowed	18	7.1
Occupation	Peasant	56	22.2
	Employed	175	69.4
	Self Employed	21	8.3
Income (monthly)	Less than KSHS 10000	15	6.0
	Between Kshs 10000 -20000	127	50.4
	More than Kshs 20000	110	43.7

The researcher sought for the background information of the respondents. The background information of respondents helps to determine whether the target population was suitable for the study, thereby authenticating the overall quality of analysis and findings (Mugenda and Mugenda, 2003). From the above respondents, it was established that majority (35.3%) of the respondents were aged between 31-35 years followed by 27.8% who were between 36-40 years. On gender, female respondents were the majority with 65.9% while on their education attained, 36.1% had a college education, followed by those with secondary education at 29%. Further, the

majority 68.3% of the respondents indicated that they were married while those that were single were 24.6%. On the occupation of the respondents, it was established that 69.4% were employed and the majority earned between KES 10,000 to KES 20,000.

Measures Taken by County Government to Improve Health of Children

The research sought to establish measures that the county government of Kericho has put into place to improve the sanitary situation of the children and the findings are as shown in Table 2.

Table 2: Measures Taken by County Government to Improve Health of Children

Characteristics	Frequency	Percentage (%)
Promoting immunization from waterborne diseases	62	24.6
The county government of Kericho has breastfeeding campaign	190	75.4
Water, sanitation and hygiene (WASH) campaign in collaboration with NGO's and CBOs	77	30.6
It has promised to provide free care during childbirth as well as free basic health services at public health facilities.	175	69.4
Addressing the issue of a severe shortage of health workers,	62	24.6
Toilet per home campaign spearheaded by Governor	190	75.4

The research sought to establish measures that the county government of Kericho has put in place sufficient measures to improve the sanitary situation of the children. The county government promised to provide free care during childbirth as well as free basic health services at public health facilities. It was addressing the issue of a severe shortage of health workers and toilet per home campaign spearheaded by the Governor.

Factors that Lead to Diarrhoeal Diseases

The vast majority of the study participants perceived that childhood diarrhoea is caused by inadequate personal hygiene, inadequate knowledge on the causes and preventions methods by parents, and poor environmental sanitation. This clearly indicates that the local population and the medical staff had the correct understanding of the causes of childhood diarrhoea. The findings are also in line with the cultured by the presented tables. However, the medical staffs also indicated that most of the parents in the region associated the occurrence of childhood diarrhoea with the eruption of milk teeth, suckling hot breast milk, exposure to hot weather and feeding more breast milk. A 30 years old medical officer elaborates how hot weather causes diarrhoea as follows:

Some parents say that when their children are exposed to hot weather, they may get diarrhoea. Therefore, if the child is exposed to hot weather, he/she gets diarrhoea.

These findings clearly indicate the existence of the knowledge gap on the aetiology of childhood diarrhoea from the parents. Thus, the study discussion informs health officials and other stakeholders to develop better strategies to avoid

these popular and sometimes unscientific misperceptions of the problem.

Many of the participants perceived that diarrhoea is one of the three most common childhood diseases in the study area. The morbidity data report of the district health office (Kericho County Ministry of Health Record book pg 28) indicated diarrhoea was among the top diseases. In relation to this point, a 36-year-old medical officer in the area who commented as follows:

The common childhood diseases in our village are malaria, diarrhoea and pneumonia. Diarrhoea hurts a child and it might lead to death. If the diarrhoea is bloody and a child does not get appropriate treatment soon, it can lead to death. In addition, a child with diarrhoea faces a loss of appetite and body weight. Therefore, diarrhoea has severe effects on child growth.

In contrast, a few of them indicated that diarrhoea was not a major health problem of children. These participants argued that diarrhoea should not be considered as a concern to child health and growth as most of the children got diarrhoea which resolved without any severe health problems. The participants perceived that the occurrence of diarrhoea is high during the rainy season, mainly because of the contamination of water sources.

Most of the health officers' patients proposed medications for mild cases of diarrhoea, which they use as first aid before they get a prescribed treatment at the nearby health facility. This treatment is available at health centres in the County. One of the health care professionals working in the clinic explained it as follows:

The commonest homemade practice is giving boiled and cooled water with honey and, silver coin before bringing the sick children to us. Amazingly, the treatment works for them. They use this practice as first aid, i.e. to save the lives of their children before bringing to the clinic as they do have a problem of getting transport on time to bring their children to town. The mothers give this traditional treatment as long as their child is able to take/drink it. As the treatment has a metallic taste, some of the children may not drink it.

CONCLUSION

There is a significant association of diarrheal incidences of children aged less than five and point of use water treatment and safe storage. There are also locally available treatment methods which some are effective and others not. We can use that opportunity to promote water treatment and storage practices which are effective and still benefit from the gain of preventing diarrhoea among our children under the age of five years. The respondents had fair knowledge of the diarrhoea among children and this was based from the responses provided. The study revealed poor drinking water handling and storage within household, hand-washing without soap before food preparation and after defecation are major risk factors for diarrhoea among children less than five years. Inadequate sanitation factors such as presence of clogged drainage near/around the house and breeding places for flies/insects near the house increase the risk of diarrhoea among children less than five years. In all, hygiene practice among the mothers/caregivers of children with diarrhoea was poor. The study concludes that improvement in hygiene; water handling practices and sanitation within households are important factors in the elimination of diarrhoea. Majority were aware of diarrhoea among children as opposed by a quarter who were not. On the main symptoms of diarrhoea, it was established that majority cited unformed stool frequently. On the causative agent of the diarrheal, it was established that majority cited germs infection followed about a quarter who indicated worm infection. This translates that the respondents' knowledge was fair. Majority of the respondents indicated use of clean water as a diarrhoea prevention method. Majority of the

households had a private pit latrine. The results show that children aged 0-5 years who are exclusively breast fed are less likely to suffer from diarrhoea than infants who were not exclusively breastfed.

RECOMMENDATION

The research found that improving access to safe drinking of water and adequate sanitation as well as providing good hygiene, are key components in preventing diarrhoea. This can be summarized as follows; Health education should be provided on the importance of treating water by boiling and storing them in covered containers. Advocacy should be done on other effective methods of water treatment approved by WHO to replace less effective local methods currently practiced. Breast-feeding and immunization as protective measure. Breast-fed babies are much less likely to develop infectious diarrhoea compared to bottle-fed babies. Promotion of exclusive breast feeding in the first 4 to 6 months of life and reductions both in the incidence of diarrhoea and related deaths are likely to be beneficial for infant survival in this population. Regularly clean the toilets used, with disinfectant. Also, clean the flush handle, toilet seat sink taps, bathroom surfaces and door handles at least daily with hot water and detergent. Disposable cleaning cloths should be used (or a cloth just for toilet use). Make sure your child washes their hands after going to the toilet. Ideally, they should use liquid soap in warm running water but any soap is better than none. The government health care workers at the government facilities should counsel all the mothers and educate them on all the water borne diseases as this would be best option to control the communicable diseases in the county. The government facilities and private facilities should start sensitizing the Kericho residents on the importance of maintaining hygiene through use of clean and treated water as well as washing their utensils with hot water and soap. The advocacy on hand hygiene with detergent (soap) to children care takers should be emphasized as it protects the children against diarrhoea.

In conclusion, improvement in access to clean water and adequate sanitation along with the promotion of good hygiene practices, particularly

hand washing with soap can help prevent childhood diarrhoea.

The study revealed that there is little research done on the diarrheal diseases and that the local population does not have adequate knowledge on the seriousness of the problem by diarrheal diseases in the sub-county. Therefore, there is a need for further research on this problem in order to create awareness of the root causes, preventive measures, better modern hygiene methods and general participation of the local population to respond to this critical issue.

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