

**THE PREVENTION AND TREATMENT OF CHOLERA OUTBREAK AT
HOUSEHOLDS AND PRIMARY HEALTH FACILITIES IN NYATIKE
SUB COUNTY, KENYA**

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ABSTRACT

Background

In Kenya, a community health strategy was adopted and one of the goals is to improve the prevention and treatment of infections at the households and primary health facilities. However, key community health indicators have remained low as regards to prevention and control of cholera. No study has investigated the prevention and treatment of cholera at households and primary health facilities.

Objective

The aim of the study was to assess the practices to prevent outbreak of cholera, knowledge of community health care workers on prevention and treatment of cholera and the preparedness of primary health facilities on the management of cholera in Nyatike Sub County.

Method

This was cross-sectional study targeting 244 community healthcare workers and adopted both quantitative and qualitative methods. On the quantitative dimension, semi-structured questionnaire was used and for qualitative, a key informant interview was used on key health personnel. The data was cleaned, entered into a computer, using statistical package for social scientists (SPSS) version 20.

Results

The results of the study revealed low hand washing and water treatment practices at (44.4%) and 55.6 % respectively and low latrine coverage of (49%). There was high knowledge of etiology, signs and symptoms, prevention and control measures at (63%). It is however paradoxical that the knowledge does not translate into practice. The low laboratory diagnostic capacity by (81%) of the health facilities, coupled with inadequate preparedness of health facility in cholera prevention and control ,have compounding causes of cholera in Nyatike sub county.

Conclusion

The study concludes that poor sanitation and hygiene practices are risk factors to cholera outbreak in the study area and the high knowledge on prevention and control does not correlate with the practices. The CHVs as change agents are overburdened due to high work load though the dependency culture appear to derail the prevention efforts. The Health facilities are ill prepared to effectively manage cholera outbreak due to inability to confirm cases, inadequate commodities and supplies, poor waste management and infection prevention strategies at the health facilities.

Keywords: Community health volunteer, Prevention and management, Cholera, Primary health facilities, Preparedness

INTRODUCTION

Cholera is an infection of the small intestines, caused by bacterium *Vibrio cholera*; it is transmitted through ingestion of contaminated food or water (Kadaleka, 2011). Symptoms of cholera can vary from mild to severe (UNICEF, 2004) and Wahed *et al.*, (2013) asserts also that, the disease occurs in epidemics when conditions of poor sanitation, crowding and famine are present. According to Sundaram *et al.*, (2013) among infectious diseases, diarrhea diseases rank third in causing mortality and morbidity in low- and middle-income countries. Cholera is a rapidly dehydrating diarrhea disease, estimated to cause the death of 100 000–130 000 persons and accounts for 3–5 million cases per year (Mpazi et al 2005).

The use of community members to render certain basic health services to their communities is a concept that is scaling up across the globe. However, there have been innumerable experiences throughout the world on both large and small scale community-based initiatives. (WHO, 2007). The World health report 2006 titled working together for health; recognizes shortage of professional health workers as one of the key ingredients in the growing human resource crisis, particularly in low-income countries (WHO, 2006).

In the last 6 years, community health strategy has been implemented in Nyatike Sub County, However the key community health indicators have remained low predisposing the community to communicable diseases. By mid-2015, a total of 4295 cases of cholera and 81 deaths (CFR=1.9 %) were reported in Kenya. Of the reported cases, Migori county was leading with 915 cases and 12 deaths (CFR=1.3) followed by Nairobi county with 755 cases (MOH, 2015). In Migori County, Nyatike sub-county reported 315 cases with CFR=1.5% (MOH, 2015). Irrespective of the various efforts employed by different institutions to prevent the disease outbreak, Nyatike sub county has been experiencing the highest rate of cholera outbreaks for the past six years as compared to other sub counties in Migori county (MoH, 2015).

MATERIALS AND METHODS

The study is a cross-sectional study design which adopts both quantitative and qualitative methods. On the quantitative dimension, semi - structured questionnaires was used to survey intervention practices on epidemic outbreak, assess the knowledge and perception of Community health workers and the level of preparedness of health facilities to manage the epidemic outbreak. On the qualitative dimension, key informants interviews obtained opinions from the SCHMTs, public health officers and the CHWs. The study used stratified and simple random sampling methods to select the CHW. The wards were the strata from which the respondents were drawn. Respondents were then drawn using purposive sampling for each stratum. The study had a sample size of 244 respondents all of whom provided written informed consent. Ethical approval was sought from Institutional Research Ethics Committee of University of Eastern African, Baraton. Analysis was done using simple descriptive techniques. The quantitative data was cleaned, entered into a computer, coded and analyzed using the version of statistical package for social scientists (SPSS) version 20. The results are presented descriptively and inferentially using frequency distributions, percentages and measures of central tendency. Frequency tables, cross tabulation, bar charts, and histograms were used in data presentations while inferential statistics were computed. Qualitative data were analyzed using content analysis where the responses were grouped into trends, sub themes and themes in which conclusion were inferred.

RESULTS

Demographic characteristics of the study population

Table 4.1: Demographic Information of respondents

<i>Characteristic</i>	<i>No (n)</i>	<i>Percentage (%)</i>
Gender		
Male	96	39.8
Female	145	60.2
Age		
20-29	16	6.6
30-39	80	33.2
40-49	132	54.8
50-59	12	5
60 and above	1	0.4
Education levels		
Primary completed		
Primary incomplete	70	29
Secondary completed	75	31.1
Secondary incomplete	59	24.5
	37	15.4
Occupation		
Peasant farmer	95	39
Business	78	32
Formal employment	62	24.5

In total, 241 community health workers aged between 18 to 49 years were interviewed. Majority of the respondents 60.2% (n=145) were females, and 39.9% (n=96) were males, and most of the respondents also fall within the age of 30-39 years 33.2 % (n=80) and 40-49 years 54.8 % (n=132). Those in age group 20-29 and 60 and above represent 6.6% and 0.4% respectively. Further the study revealed that majority of the respondents 81.3%, were married, 12.9%, widowed, 5.8% were single and that Majority of the respondents 31.1% did not complete primary education, 29% completed primary education, 24.5% completed secondary education and 15.4 % did not complete secondary education. There was low socio-economic income in the study area as most of the respondents 39% were peasant farmers, though 32 %, 24.5%, 2.1 % had business, formal employment and large scale farming as their occupations respectively.

Intervention practices towards cholera outbreak

The most effective practice in cholera prevention was hand washing with soap and safe water according to 56.8% (n=137) while hand washing and latrine use was rated effective by 30.7% (n=74) of the respondents. Hand washing after using toilet and before eating 68.9% (n=166) and before, during and after preparing food and between handling raw and cooked food 25.3% (n=61), appeared to be the most critical times of hand washing according to the respondents. Majority of the respondents either wash their hands occasionally 37.3 % (n=90) or at times 18.7% (n=45) at critical times of hand washing compared to 44% (n=106) who always wash their hands.



Figure 4.2: Frequency of hand washing.

Inadequate knowledge on use of water treatment chemicals 35.7% (n=86) and expensive chemicals 22.4% (n=54) were the major reasons why it is difficult for community members to treat water. This was followed by non -availability of water treatment chemicals in the market 19.9% (n=48), Bad smell of water treatment chemicals which causes diarrhea 16.6% n=(40) and that Pur has side effect of diarrhea 4.6% (n=11). This reinforces opinions put forward by the respondents in KII 1, who said that “*most community members even if supplied with water guard to use for treatment of drinking water, end up using the same for washing clothes with the excuse that it has bad smell*”. The CHWs has the role of Community education and mapping households without latrines 47.7% (n=115) and CLTS plus passing of key messages at the household 32% (n=77). The KII in depth interview had similar findings as the community members said that “*CHWs visit us at the households to pass key health messages and that it is attitude change that has been a challenge*”.

Table 4.2: practices that prevent cholera

Practices	Freq.	Percent
Hand washing with soap	n=137	56.8
Hand washing, using safe water and using latrines	n=74	30.7
Using latrines	n=29	12.0
Eating hot food	n=1	.4
Total	241	100.0

Knowledge on prevention and control of cholera outbreak.

Majority of the respondents 63.1 % (n=152) defined cholera as cause of diarrhea and vomiting, 30.7% (n=74) as diarrhea like rice water. However, a small proportion 5.4% defined cholera as cause of death and dehydration within hours if not treated . The study revealed that majority of the respondents 49.4% (n=119 and 47.3% (n=114) respectively were of the opinion that cholera germs are found in feces or vomitus of infected person and that it is spread through feces or vomitus from an infected person and gets into water people drink or food people eat respectively. the key ways of prevention of cholera and other diarrheal diseases include drinking and use of safe water and hand washing with soap according to 95% (n=229) of the respondents. The study established that the CHVs have a role in cholera prevention and control according to 99% (n=240) of the respondents. However, majority 60% (n=144) of the respondents felt that they do not undertake their roles effectively while minority 40% (n=96) felt that they undertake their roles effectively. education on self- efficacy on water treatment 51.5 % (n=124) and installation and effective use of hand washing facilities 29.9% (n=72) were the most effective cholera prevention measures according to majority of the respondents while Minority, 12.9 (n=31) and 5.8 (n=14) respectively were of the opinion that education on hygienic food handling and ensuring every house hold has latrine were effective preventive measures.

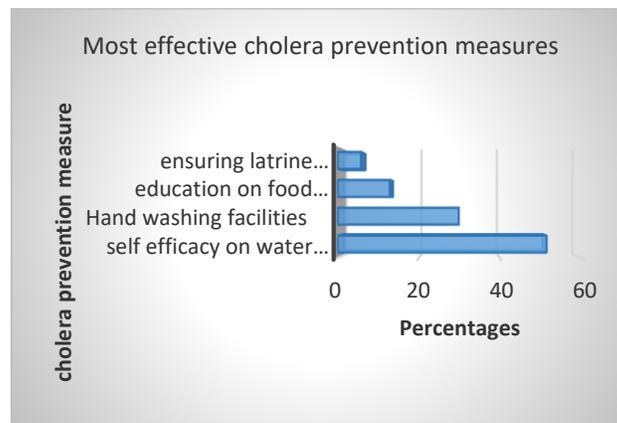


Fig 4.3: Cholera prevention measures

The key challenges in dealing with community health problems according to the study are expectation of subsidies and aid from government and other urgencies 52.6% (n=126) and non – responsive community members 28.6% (n=69) according to majority of the respondents . Other challenges as indicated by the minority of the respondents include, belief that solution come from outside 12.9 (n=31) and negative political influence 6.2% (N= 15).

Preparedness of health facilities towards outbreak of cholera

According to the study, majority of the Health facilities 62% (n=10) had a clear clinical definition of cholera as compared to 38% (n=38) which did not have .On display of the WHO diarrhea treatment chart showing plan A, B and C treatments, 75% (n=12) did not have as compared to 25% (n=4) who had. Majority of the health facilities 68.7% (n=11) had communication equipment (e.g. mobile phone) to alert district and/or regional officials if they detect a patient with cholera while minority 32.3% (n=5) did not have, Most of the health facilities 81.3% (n=13) did not have capacity to test cholera while only 18.7% (n=3) had. All the facilities 100% (n= 16) keep records of all cholera patients and their clinical outcome. majority of the health facilities 57% (n=11) did not have supplies for obtaining stool specimen from suspected cholera case this compared with 43% (n= 7) which had .On availability of cholera beds, majority of the health facilities 81.3% (n=13) did not have as compared to minority 18.7% (n=3) which had . Most health facilities 93% (n=15) had ringers lactate IV fluids and IV sets but only 7% (n=1) did not have .Policy for proper antibiotic treatment for cholera patients (children and adults) was available in most 75% (n=12) of the facilities while 25% (n=4) did not have .The study revealed that majority of the Health facilities 57% (n=9) did not have away of proper disposal of contaminated feces of cholera patients while 43% (n=7) had. Ways of decontamination of the bed linen or plastic linings was available in half 50% (n= 8). Hand

washing stations were not adequately available in most 69% (n=11) of the health facilities as compared to 31% (n=5) which had . While 81% (n=13) of the health facilities had different chlorine solutions available and clearly labeled for different use only 29% (n=3) did not have.

DISCUSSION

Apparently from the study findings, there is low practice of hand washing with soap at critical times at the house hold level in Nyatike sub County as fifty six percent do not wash their hands with soap at critical times. Cholera has a fecal-oral transmission route in which contaminated hands is a vehicle. It happens when someone ingests the feces of an infected individual through contaminated food or water. Therefore the fact the hand washing practice is low in the study area, portents a predisposing factor to cholera infection. This corroborates with Mpuzi et al, (2005) in their study on practice with regards to cholera outbreaks in Illala stated that many people had poor hand washing practices which contributed to outbreaks in the area.

There was low water treatment practice at house hold level and since contaminated drinking water is probably the most common cause of cholera especially in poor and vulnerable communities, the chances of outbreak are greatly enhanced. According to Greaney 2011 ,providing safe water and promoting handwashing are common WASH interventions in outbreaks, but interventions could also include managing the local environmental hazards like rubbish disposal or increasing latrine use.

There was high knowledge of etiology, signs and symptoms including prevention and control measures. It is however paradoxical that the knowledge does not translate into practice. The risk factors revealed by the study include poor hygiene practices, contaminated water and low latrine coverage and use. There is a correlation of poor hygiene practices, contaminated water and low latrine coverage in cholera outbreak. This compares with a report by WHO, 2009 that showed that the majority of people in developing countries had poor disposal methods of fecal matter hence water which is the basic need for all humans and animals is contaminated and as a result, Many developing countries will continue experiencing chronic water borne diseases and cholera.

To avert the status quo, the community health volunteers find engaging in formation of village sanitation committees and enhancing community education on prevention and control of cholera as critical action points . community led initiatives normally succeed well because it ensures ownership and sustainability .These findings are in line with MOH India 2007 report which states that; the concept of constituting VHSNCs lies in the fact that decentralized health services by the community for the community will provide inputs to ongoing healthcare activities at the local level and thus cater to local context and healthcare needs and in the prevention of communicable diseases like cholera. MOH India 2017. According to Phelan, (2008), it is now

widely recognized that health outcomes are deeply influenced by a variety of social factors outside of health care. The dramatic differences in morbidity, mortality, and risk factors that researchers have documented within and between countries are patterned after classic social determinants of health, such as community education .Phelan 2008.

The health facilities thus lack the much needed effective response capacity in terms of testing and confirmation of cases and lack of laboratory reagents which can be so devastating to the outbreak management and may hamper rapid action in cholera prevention. This relates with WHO 2010 report that, defining how cases will be identified is an important first step for any surveillance system. Broadly, a case can be identified “clinically” if the signs and symptoms are consistent with the clinical definition as described by the World Health Organization. Alternatively it can be a “confirmed” case of disease if the results of a clinical case are confirmed by microbiological culture. While a case definition is useful, it must also be considered that severe diarrheal diseases can be caused by other agents, especially enterotoxigenic E coli; thus, cholera cases will often need to be confirmed. The proportion that need confirmation depends on the situation.

The study revealed weak infection control and sanitation systems as most the Health facilities 57% did not have a way of proper disposal of contaminated feces of cholera patients and hand washing stations were not adequately available in most 69% of the health facilities, even though 81% of the health facilities had different chlorine solutions available. This compares with a study by WHO 2012 which indicates that containment and disposal of excreta during cholera outbreak is vital to infection prevention.

A treatment centre can be a major source of infection because Cholera patients contaminate the environment and many friends and relatives visit the sick. An infected person with or without signs discharges Cholera germs (Vibrios) in their stool and can contaminate water or foods. Any surfaces or articles that come into contact with the stool of a Cholera patient gets contaminated and is potentially infectious. The only way to reduce the risk of transmission is effective disinfection of Cholera stools, vomitus, and contaminated clothing and floor surfaces. Chlorine is one of the most widely used disinfectants. Chlorine is an important substance in fight against Cholera. It is used to disinfect water and to prepare solutions of different strengths for washing patients, disinfection of materials, buildings, excreta, vomitus and disinfection of bodies of Cholera patients. UNICEF 2009.

CONCLUSIONS

The study concludes that there was poor sanitation and hygiene practices as hand washing, water treatment and low latrine use are not practiced by most of the community Health members.

Knowledge gap exists in prevention and control of cholera and community health volunteers who are the change agents, not only receive minimal support but are also overwhelmed due to the high work load. Expectation of subsidies and aid from government and other urgencies by community members is perceived as a factor derailing prevention and control of cholera efforts since community members fail to engage in sustainable preventive measures in anticipation.

The Health facilities are ill prepared to effectively manage cholera outbreak due to inability to confirm cases, inadequate supplies, poor waste management and infection prevention strategies at the health facilities.

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