

## **Promotion of Primary Healthcare in Rural Communities Using Public Health Systems: a case of Elburgon Division, Nakuru County, Kenya**

Anne Nakhumicha Tenya<sup>1</sup>, Moses Mong'are Gekara<sup>2</sup>

<sup>1</sup>*School of Information Sciences and Knowledge Management*

*University of Kabianga*

<sup>2</sup>*Office of the President*

---

### **Abstract**

**Purpose:** The paper examines the effectiveness of public health information systems in promoting primary healthcare in Elburgon division, Nakuru County, Kenya and suggests possible recommendations to improve health information delivery in rural communities.

**Design/methodology/approach:** The study used a qualitative method with exploratory and descriptive study design in order to gain an understanding of the public information systems used and their effectiveness in promoting healthcare in rural communities, using Elburgon division, Nakuru County, Kenya. In-depth face-to-face interviews were conducted with Community Health Workers (CHWs), Community Health Extension Workers (CHEWs) and households (parents) drawn from the entire Elburgon division, Nakuru County, Kenya. Document analysis was also used to collect data.

**Results:** Findings showed that despite concerted efforts by both the government and Non-Governmental Organizations in promoting primary health care, human life is still threatened by diseases of all kinds. There is still a high death rate resulting from various ailments including malaria, HIV/Aids, respiratory diseases, STDs, Diarrhoea, as well as new diseases emerging, others becoming resistant to treatment. Promotion of primary health care experienced challenges such as ineffective public health information systems, inadequate funds and inadequate skilled personnel.

**Practical implications:** In the twenty-first century and beyond all citizens no matter how remote, should not be without identifiable and realistic access to the benefits of public health protection through a local component of the public health delivery system. The County governments should recognize the importance of effective public health information systems and establish local public health departments, recruit and train more community health workers in order to meet the health needs and demands of the rural communities.

**Originality/value:** The present competitive world favours a healthy population for rapid socio-economic development which is a basic pre-requisite for successful industrialization. This paper examines the effectiveness of public health information systems in promoting primary healthcare in rural communities, an aspect that has received less attention by policy makers. The findings are aimed at assisting both government and Non-Governmental Organisations in their effort of creating a healthy population through containing communicable diseases within Elburgon division, Nakuru County, Kenya.

**Keywords:** Rural Community, Healthcare, Promotion, Information systems, health Information.

---

Date of Submission: 25-07-2020

Date of Acceptance: 09-08-2020

---

### **I. BACKGROUND INFORMATION AND RATIONALE**

Health promotion experts now concur that further improvements in health status are more likely to occur when increased attention is given to health promotion interventions that address the precursors of chronic conditions, including lifestyles, high risk behaviours, diet, and the more general community conditions in which people live. It is well recognized that prevention efforts cannot be confined to clinical settings. Although health care providers have an important role in carrying out activities such as screening, patient education, and health counselling, they are only one part of a more comprehensive strategy that needs to be deployed. To maximize the likelihood that significant population-wide improvements in health will occur, promotive services need to become broader in scope, reaching many more individuals than are currently being educated or counselled in clinical settings. Prevention strategies also need to become more effective and culturally relevant, incorporating behaviour change strategies that target risky behaviours while increasing behaviours that improves and promotes lifestyle changes. Community-based health promotion is increasingly being recognized as an effective public

health paradigm for improving a community's overall health. A healthy population is a basic right and prerequisite for fast socio-economic development that is a necessary requirement for successful industrialisation.

Public health is the foundation of the health care system, but many signs point to emerging structural problems. In the recent past, Kenya has experienced emerging and drug-resistant diseases that threaten to overwhelm resources while serious training inadequacies threaten the capacity of the public health workforce to address new threats and adopt changes in the healthcare market. Public Health Information Systems (PHIS) are infrastructure with elements including information, data, communication systems, which assist the public health professionals, diagnose the health of populations, distribute resources to the right areas and alert the public on health issues. They are some of the national infrastructure developed by the government of Kenya and Non-Governmental Organizations (NGOs) as ways of reaching and sensitizing citizens on health issues. However, many rural communities continue to experience gaps and shortages in their public health systems. Despite well-documented rural health disparities such as higher rates of chronic diseases, not all rural communities have a governmental local public health presence. Where local public health facilities exist, rural communities still face limited access to public health services due to constraints in funding, staffing and technological capacities.

Given the unique health needs of rural residents and challenges faced in assuring access to public health services in rural communities, public health information systems need to be efficient and effective in promoting healthcare. Public health institutions require well-designed information systems in order to make the best use of the growing supply of health-related data.

The systems are relied upon by the institutions to inform managerial decision making and improve operations in areas such as epidemiologic surveillance, health outcomes assessments, program and clinic administration, program evaluation and performance measurement, public health planning, and policy population-based application objectives, units of analysis, data sources, data linkage methods, technology selection and integration strategies, and information privacy protection (Studnicki, 2011).

#### *Research context*

Elburgon Division in Nakuru County has a population density of about 333 persons per square kilometre. The population is densely populated particularly within market centers with most of the households living in wooden structures that are likened to slums, except a few who live in stone (permanent) houses. The sources of water within the division are boreholes and there is a high level of poverty within the division. People live under poor hygiene conditions evidenced from the high number of people suffering from diarrhoea related diseases. There are few health facilities within the division provided by both the government, Non-Governmental Organizations (NGOs) and Faith-based. Public Health Officers (PHO), CHEWs and other Community Health Workers (CHW) within these health facilities are involved in disseminating public health information to the people in various ways including reaching every homestead and ascertaining that they have latrines among other public health issues.

The Kenyan government over the years has demonstrated its commitment to improving the health of its citizens. The government's policy objective is to have affordable, effective and accessible health services that promote the well-being, improve and sustain the health status of all Kenyans (National Development Plan 1997-2001). Besides the government's efforts in formulating and implementing the policies, it provides funding and also receives support from Non-Governmental Organizations (NGOs) and private providers. The government provides preventive, promotive, curative and rehabilitative services and other essential public health services. There are 6 health facilities in Elburgon division facilitated by the government, religious organizations, NGOs and private providers including Elburgon Sub-Country Hospital (government sponsored); Mariosioni Dispensary (government sponsored); St Peters Health Centre (Catholic church sponsored); Elburgon Health Centre (PCEA sponsored); Elburgon Nursing Home (Private) and St James Clinic (private).

## **II. LITERATURE REVIEW**

### *Overview of Primary Health Care*

The concept of Primary Health Care (PHC) emerged out of a joint meeting organized by World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF), at Alma Ata in the Soviet Union (WHO and UNICEF, 1978). The WHO launched the idea of 'health for all by the year 2000' whereby health had to be considered in a broader context. PHC includes components such as promotion of food supply and proper nutrition; adequate supply of safe water and basic sanitation; education concerning prevailing health problems and ways to prevent and control them; maternal and child health, including family planning, immunization against infectious diseases; appropriate treatment of common diseases, injuries and provision of essential drugs. Governments and NGOs representatives at the meeting reviewed the then existing health policies and worked out new and extended policies aimed at overall 'world health'. This concept envisaged the bringing together of existing health programmes such as health education, immunization, environmental control, and treatment of common diseases. The PHC programmes were therefore set up and the

strategy included 'full participation' of the community. Community Health Worker (CHW) was later created with a view of strengthening community involvement in implementing programmes.

The CHW's job includes many facets of health care such as promotion of community development; improving village life and health by encouraging the use of clean water; latrines and good farming methods for better nutrition. This has further developed as 'Community- Based Health Care (CBHC) which has today become essential. However, the World Health Report 2008 observes that primary health care health systems in developing countries have not responded adequately to people's needs. Kenya being one of the developing countries still struggles to build a health system that can effectively deliver quality health services to its population.

#### *Primary Health Care (PHC) in Kenya*

A large number of Kenyans continue to carry the highest preventable burdens of ill health yet much of this burden can be lifted and prevented using the existing knowledge and resources. Kenya has well defined national health policies and a reform agenda whose principal strategies are directed on improving health care delivery services and systems through efficient and effective health management systems and reform. However, it has not managed to improve the situation of households entrapped in the cycle of poverty and poor health.

The situation has further been complicated by the emergence of new and resurgence of old communicable diseases. The community systems are faced with the challenge of coping with the increasing demand for care, in the face of increasing poverty rates and declining resources resulting in waning trends in health status throughout the country with deplorable disparities within Counties. Moreover, the cost of health services has risen well beyond the financing capacity of the Ministry of Health (MoH). Adetokunbo (2005) notes that PHC is essential and should be universally accessible to individuals and families in the community through their full participation and at a cost that the community and the country can afford to maintain at every stage of the development in the spirit of self-reliance and self determination

The health sector reforms and PHC concept have advocated for better health for Kenyans through people's active initiative and involvement. The health sector reforms expanded the community-based health care (CBHC) principles by decentralization to formalize people's power in determining their own health priorities and to link them with the formal health system in order to reflect their decisions and actions in health plans (Ministry of Health, 2006). Additionally, the National Health Sector strategic Plan (NHSSP) II has expressed the move towards the community's participation in resource mobilization, allocation and control to ensure the effectiveness and decentralization, as power is shifted to the councils and governing structures that enhance transparency and accountability.

#### *Public health*

Human life is threatened by diseases of all kinds ever since ancient times (Detels, 2002). Historical records from Egyptians, Romans, Greek and Indian civilians revealed the dreadful nature of infectious diseases and how they were overcome. The teachings of Lord Budha, as well as the Bible, the Koran and Judaic literature, covered various aspects of personal hygiene and other public health practices including civic duties. Sanitation measures were enforced through royal decrees. Detels (2002) notes that diseases like syphilis, malaria, leprosy, tuberculosis, smallpox, measles, plague and cholera were rampant. Colonial rulers therefore established laws similar to those in their home countries to protect the health of their people and workers and enacted laws such as: the Public Health Act; Local government Act; Factory Act; Vaccination Act and contagious diseases Act. These Acts remained in force for many years and some are still in force today in some countries.

The focus of the public health field is the needs of populations hence in all periods of development, there has been involvement in the search for understanding of the causes of diseases; the development of technical means for protecting the population against disease, the targets being the environment as well as disease producing organisms and the organization of health programmes to bring technology to bear on the central health problems of the nation or community. As civilization progressed, the main health problems related to the means of achieving sanitation, the growing of food and the conditions of work also increased.

In the United States between 1900-1945, the public health field had much narrower interests than it has today. It restricted itself largely to the control measures for communicable diseases; systems for reporting these conditions; health education; selected illness, surveillance; control of the handling of water and food and the operation of clinics for detection of treatment of tuberculosis, venereal diseases, prenatal and well-baby clinics. Lankester (2002) observes that public health today includes topics such as the cost of medical care and the complex problems of planning for the best of health care for the general population. He further notes that the best healthcare should be given to special groups including infants, young children, and pregnant women, the elderly and migrant workers.

#### *Public Health and Common Communicable Diseases in Kenya*

Referring to the scenario of the concept of PHC and later of the CBHC, the CHWs sensitize the citizens within the community on the common communicable diseases. These diseases are as a result of poor hygiene such as consumption of unclean foods, lack of latrines in homesteads and poor sanitation. The diseases include malaria, diarrhoeal diseases (dysentery, typhoid and Gastro-enteritis); respiratory diseases (colds, tonsils, bronchitis, pneumonia, whooping cough, asthma, tuberculosis); skin diseases (scabies, ringworms, jiggers, impetigo, yews and other skin diseases); Sexually Transmitted Diseases (STDs) such as gonorrhoea, syphilis and HIV/AIDS. Health is a major need of society and the government ever since independence has expressed the commitment to improve its citizen's health.

In the 1965 session paper no 1, 1965, the government indicated its earliest interest by declaring war against poverty, illiteracy and diseases. During the joint conference of 1978 between the WHO and UNICEF, Kenya pledged to combat HIV/AIDS, malaria, and other diseases by the year 2015 and to attain "health for all by the year 2000". The government and NGOs have joined efforts to fight diseases where the government has invested in the expansion of health personnel and infrastructure. However, communicable diseases which spread from one person to another and even from animals to people continue being a major health problem in Kenya. They together with malnutrition form the major cause of illness in Africa today. The communicable diseases afflict people at all ages but most common in childhood due to intensive exposure and poorly developed immunity. Detels (2002) notes that health problems vary considerably in different parts of the world, although communicable diseases once dominated the scene. It is estimated that 48 percent of deaths among 0-44 years of age occur from infectious diseases which have remained a major public health challenge in the modern world. In the past decade, the leading infectious diseases worldwide in terms of both death and disability have been acute respiratory infections, HIV/AIDS, diarrhoea diseases, tuberculosis, malaria and measles (Kimalu, 2004).

#### *Factors Influencing the Persistence of Communicable Diseases*

Several factors are associated with the persistence of communicable diseases including poverty and social inequality, illiteracy, poor nutrition, inadequate housing, rapid urbanization, failure to implement known preventive strategies, changing lifestyles that promote greater social and sexual mixing, limited access to health care, inadequate surveillance systems, overcrowding, uncontrolled reproduction and low education levels. Communicable diseases include global scourges such as HIV/AIDS, tuberculosis, malaria and the neglected tropical diseases as well as emerging infectious diseases. Lozano et al. (2012) opines that HIV/AIDS, tuberculosis, malaria, lower respiratory infections and diarrhoeal disease cause close to 9 million deaths every year, mainly in low and middle-income countries. Communicable diseases disproportionately impact the poor, both rural and urban, and mortality from these diseases is highest among children under age 5. Despite concerted efforts and some success in preventing and treating communicable diseases, they remain among the leading causes of mortality in many countries, particularly in Africa (Lozano et al. 2012). These diseases spread in several ways including directly from person-to-person through contact with blood or other bodily fluids, from animals to humans, and via airborne pathogens. Global factors also influence the spread of communicable diseases. They include migration, urbanization, and environmental degradation. Alirol et al. (2011) observes that cities serve as hubs of international travel, which facilitates the spread of pathogens globally hence the persistence of communicable diseases.

#### *Health Service Delivery in Kenya*

The health service delivery is implemented through the Kenya Essential Package for Health (KEPH) which integrates all health programmes into a single package to improve the health of the population in the different stages in their life cycle and incorporate the various systems that support KEPH. These include improving lifestyle, preventing diseases and curing illness. Baselines and targets are set by each County for service delivery programmes for all levels. The National Health Sector Strategic Plan (NHSSP) is envisaged to deliver KEPH across all cohorts with a focus on the individual through Primary Health Care (PHC) and advocate on health approaches; and on community through population-based activities using the household as the entry point (Ministry of Health and Sanitation, 2010).

The cohorts include:

- i. Pregnancy and the newborn (2 weeks of life) to ensure mothers are kept healthy during pregnancy, have normal deliveries and all newborns receive protection against immunization conditions;

- ii. Early childhood (2 weeks to 5 years and 5 years-12 years) to ensure children receive protection against immunizable diseases, survive childhood illness, are protected against exploitation and abuse and a healthy lifestyle adopted amongst children;
- iii. Adolescent (13- 24 years) to ensure behavioural change is promoted amongst adolescents that leads to a healthy lifestyle, survive common health conditions affecting them and protected against exploitation and abuse;
- iv. Adult (25- 59 years) to ensure they are practising a healthy lifestyle and are able to survive common health conditions affecting them;
- v. Above 60 years to ensure elderly persons are practising healthy lifestyle, are protected against exploitation and abuse and are able to survive common health conditions affecting them.

Kenya's health care delivery system revolves around the Ministry of Health (MoH) headquarters, and the Counties. Policies are set up at the headquarters and coordinate the activities of NGOs, manage, monitor and evaluate policy formulation and implementation. The County tier acts as the intermediary between the central ministry and sub-county overseeing the implementation of health policy at the County level. It also maintains quality standards, coordinates and controls all county health activities, monitors and supervises County Health Management Teams (CHMTs) which supervise the operations of health activities at the County level.

#### *Health service workforce in Kenya*

Adequate, appropriately trained personnel are required to achieve health goals. The health workforce is a fundamental, yet traditionally overlooked component of any health system (Hongoro & Mcpake, 2004). In a shift from a disease-specific approach to health promotion, care and treatment, policy makers are now moving towards a health systems approach that includes strengthening the health workforce. The Ministry of Health and Sanitation (2010) admits that there is a shortfall of health workers and uneven distribution within health facilities. Health staff including Community Health Workers (CHWs), Public Health Extension Workers (PHEWs), Public Health Officers (PHOs), Nurses and Clinical Officers are mainly based at the peripheral health facilities, a situation that leaves most rural health facilities with inadequate staff.

#### *The Community Based Health Care (CBHC)*

The concept of Community Based Health Care (CBHC) was developed from the PHC programmes and strategies that included 'full participation' of the community. According to Detels (2002), Community Based Health Workers (CBHW) is defined differently in different countries according to the needs of the country and the resources available for satisfying them and their roles; and responsibilities also vary. The WHO (1978) defines CBHW as people with limited education, trained in a short time to carry out a wide range of restricted aspects of health care services. They serve the community in which they live and are chosen by the community members.

The CBHWs serve as a link between the community and the health systems. They provide information that promotes individual and family self-care. Others play specific roles such as traditional birth attendants with training from health professionals. The CBHW's idea is to strengthen community involvement in implementing health programmes such as promotion of community development, improving village life and health; encouraging the use of clean water, latrines, good farming methods and better nutrition. Lankester (2002) includes health education, mother and child health services, diagnostic and curative care, control of infectious diseases, adequate nutrition, immunization, improvements in water supply and sanitation, referral system, monitoring and evaluation; and effective management as roles played by CBHW. The CBHWs links in to other forms of community developments such as:

#### *Health Education*

The WHO expert committee on health education outlines its aims including making health a valued community asset, equipping people with knowledge and skills that they can use to solve their health problems and to promote the development of health services (Grol, 2005). Health education helps people to understand what health is and how to look at it, know the need for health and health services; and disease control programmes, show people that good health and health services are a basic human right, and important for development. It also helps people to know that health education is part of primary prevention and know about diseases and how to make the best use of organized health facilities. The types of educational interventions include outreach visits, use of opinion leaders and distribution of health educational materials.

#### **Public Health Information Systems (PHIS)**

Information systems have emerged as crucial public health tools. Presently, information systems provide real-time data to guide public health decisions. The rise in importance of health information systems has three fundamental sources: the growing extent of data available from multiple public and private sources; advances in information technology; and the growing recognition of the power of information in public health decision making. Information systems are used to store and make available service data that reflect activities performed by health organizations and other health-related entities; information systems store and make available population-based data that are important for surveillance, program evaluation, policy making, and priority setting in public health.

The Health Information Management System (HMIS) department in the MoH receives routine data on the causes of in-patient morbidity and mortality from government health facilities across Kenya. National Disease Summary (NDS) and data capture tools have been designed for capturing the majority of the diseases that are reported in the country.

The Division of Disease Surveillance and Response (DDSR) implements the Integrated Disease Surveillance (IDS), which is a mechanism devised to record and report on major diseases in the country. The division carries out surveillance on diseases of public health importance affecting the Counties including the emerging and re-emerging diseases. This information is collected weekly from Counties and sent to the national level where the data is analyzed and disseminated to the end users. Most of the information used in health services delivery is derived from health facilities at levels 2, 3 and 4. However, health and health related information and data generated in the communities are rarely linked with these higher levels (Ministry of Health and Sanitation (2010).

While Information systems have been put in place by the Ministry of Health for disease surveillance, people in Elburgon division still experience high death rates and infections particularly communicable diseases. It is on this premise that this study evaluates the effectiveness of the information systems in promoting primary healthcare in the sub-County. Public health information system catalog user guide recommends that the systems should disseminate information to high risk groups including children and pregnant mothers; health providers and the general public. Public health information is important for health promoters and for evaluating the success of health promotion initiatives. Lankester (2002) observes that there are many ways of teaching and creating health awareness but cautions that any method chosen should be appropriate to the local culture, avoiding methods that are strange to the local people, offensive or giving wrong messages.

The teaching should be in line with the religious or social customs and use of the local language and dialect to make people feel they own the programme. The methods should also be appropriate to the subject being taught, especially mothers should be encouraged to carry out practical demonstrations such as the preparation of oral rehydration solutions; and appropriate to the level of education. It should be appropriate to the resources of the project and community such as use of films as an appropriate way of teaching requires money, spare parts, fuel and expertise to make it successful; and appropriate to the gifts of people. Health educators should use a natural actor, teacher or storyteller. This will enable the audience to understand the message better, especially those with low education.

#### *Community Health Workers (CHWs)*

Also known as village health volunteers/health guides/sanitation monitors, community health workers and birth attendants; CHWs are locally recruited and trained by the MoH in partnership with NGOs such as APHIA-Plus, AMREF, FHOK and RHRA. They are trained in areas such as basic counselling, nutrition, first aid, communicable diseases, reproductive health, family planning, HIV/Aids and management. The CHW's responsibilities include informing the villagers in their respective areas about information related to health, collecting information regarding health and health related matters such as births, deaths, pregnancies, problems and needs.

They disseminate knowledge, advice and stimulate the public on the elements of PHC including education concerning prevailing health problems and the methods of preventing and controlling; promotion of food supply and proper nutrition, maternal child health care and family planning, adequacy of safe water and basic sanitation, immunization against major infectious diseases, prevention and control of locally endemic diseases and to carry out and co-ordinate health development activities and join other intersectoral development activities. CHWs report to Community Health Extension Workers and chiefs cases of uncooperative and hostile households.

#### *Community Health Extension Workers (CHEWs)*

These are health professionals from the MoH (health link facilities) who work together with CHWs in communities. They receive monthly reports from CHWs, and compile the reports and channel them to the link health facility. They deal with referral cases by CHWs from the community and play intervention roles in cases

of uncooperative households. Together with CHWs, they carry out immunization campaigns and health camps where disease outbreaks have been reported.

#### *Traditional Health Information Systems*

The East African Journal of Public Health (2006) observes that the death of each modern or traditional health practitioner constitutes a permanent loss of a library of knowledge, ideas, innovations and interventions. Each community has its own traditional health practitioners including priests, herbalists, and traditional midwives. They have traditional skills or knowledge to heal except in serious situations where health workers are called in. Health care takes place in the community according to the wishes and convenience of people and patients. Senior members of the family such as grandparents are perceived as the source of wisdom, advising on health-related issues.

Traditional health practitioners perform tasks including informing the villagers about information related to health. Priests are believed to have the power of healing through prayer; herbalists use traditional herbs in treating illnesses and also advise people about preventive and control measures, while traditional midwives act as mobile antenatal clinics, birth attendants and also advice on traditional family planning methods and nutrition. Herbalists and traditional midwives offer their services at a small fee affordable by the community.

#### *Public Health Officers (PHO)*

Health care delivery systems involve a variety of professionals such as physicians, nurses, hospital administrators and pharmacists who interact with each other and patients. The government has invested both in expansion of health personnel and health infrastructure through continued training. Although this is so, their distribution is uneven particularly in rural areas where there is serious imbalance affecting health provision.

Jankester (2002) notes that health care takes place in hospitals or clinics at the convenience of the doctor or private practitioner. The health worker is an outsider with specialized and scientific knowledge. They demand high fees which the poor cannot afford. He further advises that PHOs should use simple non-medical terms to the patients when raising health awareness to ensure that the patients understands the message. They should use lecture methods which should be short and allow for audience participation. Public health workers should be able to more effectively undertake public health action because of improved management of information and increased access to key data elements.

#### *Health Facilities/Centres*

Several ways are employed in raising health awareness in health facilities including personal teaching at the point of need whenever a community member and a health worker get together, in a clinic or a home. This kind of teaching is often more effective because people listen best when they have a problem and want to find an answer. Tools also used include posters, calendars and printed leaflets to communicate health information to people. However, beneficiaries are mainly those who are literate and able to access these materials.

#### *Administrative Officers*

The Law of Kenya (1998), the chief's Act Cap 128 section 10 states that any chief may from time to time issue orders to be obeyed by the persons residing or being within the local limits of jurisdiction including preventing the spread of diseases, whether of human beings or animals, preventing the pollution of water in any stream, watercourse or waterhole and preventing the obstruction of any stream or watercourse. In Kenya, chiefs use their meetings (baraza) to reach a large audience where they disseminate health information among other government policies to the people. Since chiefs come from the same communities, they use mother tongue to communicate information, an advantage to the illiterate within the community. Chiefs are also known to invite the public health officers to their 'barazas' and this gives the opportunity to the PHOs to relay health information to the public. Apart from the chiefs' barazas, funerals have formed good forums where large audiences can be reached within the community. Politicians together with government representatives get opportunities of reaching people and disseminating information on communicable diseases especially HIV/AIDS.

#### **Statement of the Problem**

Information systems are essential public health tools that provide real-time data to guide public health decisions. Given the unique health needs of rural residents and challenges faced in assuring access to public health services in rural communities, public health information systems need to be efficient and effective in promoting primary healthcare. However, despite the efforts in disseminating health information within Elburgon division, Nakuru County, Kenya, there are still a high percentage of infections with various epidemics and death

rates among all age groups. Therefore, the study examines the effectiveness of public information systems in promoting primary healthcare in the rural community of Elburgon division, Nakuru County, Kenya. Specifically the study analyzed some of the information systems used including CHWs, CHEWs, media (radio, television and newspapers); administrative officers (chiefs) and churches.

#### **Objectives**

- i. To identify the types of public health information systems used in promoting primary health care in Elburgon division, Nakuru County, Kenya
- ii. To find out the information gathered by the health information systems in Elburgon division, Nakuru County, Kenya
- iii. To determine how the information gathered relates to decision making in the health facilities in Elburgon, division Nakuru County, Kenya
- iv. To assess the effectiveness of health information systems in promoting healthcare in Elburgon division, Nakuru County, Kenya
- v. To identify problems encountered with the collection and dissemination of health information and suggest possible solutions for improvement.

#### **Research Questions**

The following research questions guided the study:

- RQ1. Which health information systems are used in promoting primary health care in Elburgon division, Nakuru County, Kenya?
- RQ2. What information is gathered by the health information systems in Elburgon division, Nakuru County, Kenya?
- RQ3. How is the information collected used by the link health facilities in Elburgon division, Nakuru County, Kenya?
- RQ4. How effective are the information systems in collecting and disseminating health information in Elburgon division, Nakuru County, Kenya?
- RQ5. What are the challenges experienced in the use of the available health information systems in Elburgon division, Nakuru County, Kenya?

### **III. RESEARCH DESIGN AND METHODOLOGY**

#### *Research method and design*

To examine the effectiveness of public information systems in promoting primary health care in Elburgon division, Nakuru County, Kenya, a qualitative research approach was followed with exploratory and descriptive research design where face to face interviews were used to collect data from Community Health Workers, Community Health Extension Workers, and households. The respondents were drawn from all locations of Elburgon division. Respondents for the study were randomly sampled from households in the 5 locations. CHEWs were purposively sampled from 3 health facilities as well as CHWs from the division. Open-ended face to face interviews were conducted with 30 mothers, 20 fathers, 6 CHEWs and 10 CHWs. This method ensured a high response rate and provided an opportunity to observe the non-verbal behaviour of respondents and correspondingly adjust the choice of language to be able to probe for details. Notes were taken during interviews and the transcripts formed the database for analysis and were also summarized in tables.

#### *Population and study sample*

The sample was drawn from the 5 locations and three health facilities in Elburgon division. The respondents included parents (mainly mothers with children below 10 years). Three categories of interview guides were used to collect data from respondents. In total, the sample size for the study was 66 distributed as follows; 30 mothers, 20 fathers, 6 Community Health Extension Workers and 10 Community Health Workers. Mothers are directly involved in the care of children who are the highest prevalent group affected by diseases. Community Health Extension Workers are the health professionals who are part of the public health information systems and engaged in dealing with treatment and other health issues affecting communities while Community Health Workers are also part of the public health information systems involved in collecting health data and disseminating health information in the community.

#### *Sampling strategy and techniques*

Elburgon division has the highest prevalence of communicable diseases in Nakuru County, and was purposively sampled for the study. The households were randomly selected from the 5 locations in Elburgon division while 6 Community Health Extension Workers and 10 Community Health Workers were purposively selected from three health facilities and the 5 locations respectively as key informants believed to be in



possession of knowledge of the effectiveness of the information systems in place to adequately respond to the research questions.

*Data collection methods and approaches*

Three interview guides were used for gathering data from the respondents: for households, Community Health Workers and Community Health Extension Workers. Within these categories, questions requiring ideas and opinions from respondents were identified and used in open-ended interviews. The study also used document analysis to collect data and information. Documents analyzed included Community Health Workers tools including MoH 513, 514 and referral books.

*Data analysis procedures*

The study used both primary and secondary data collection approaches. Primary data collection used interview guides. Notes were taken during interviews and the transcripts formed the database for analysis. Analysis of data was conducted according to qualitative studies as described by Babbie (2007) where open coding was used to categorize and classify data, and to identify similarities and differences. Descriptive statistics were used to analyze data, which were also summarized in tables. Secondary data collection involved document analysis or review of relevant information sources.

**IV. FINDINGS AND DISCUSSIONS**

Interviews were conducted with 66 respondents; data was collected from Community Health Workers, Community Health Extension Workers and households drawn from the entire Elburgon division. The study sought to determine the effectiveness of public health information systems in promoting primary health care in Elburgon division, Nakuru County. Each of the three categories of respondents yielded a 100% percent response rate. This can be attributed to the fact that the researchers personally carried out face to face interviews.

*Public information systems used in promoting PHC*

Findings showed that 42 percent (21 of 50) of households received some formal or informal health information and were aware of the health information systems used in promoting primary health care, 40 percent (20 of 50) were aware of some information systems but did not use them for information while 18 percent (9 of 50) indicated that they did not.

Further probing revealed that they belonged to religious faiths that did not believe in the treatment of the sick and some did not find it necessary. The respondents identified the public health information systems including, Community Health Workers, Community Health Extension Workers, traditional health practitioners, public health officers, health facilities, administrative officers (chiefs), funerals, churches, and media (radio, television and newspapers). Table 1 represents a summary of the level of awareness of the public health information systems in use.

**Table 1: Level of Awareness**

Public Health Information System	Very much Aware		Aware		Not aware	
	Freq.	%	Freq.	%	Freq.	%
CHWs	10	20	30	60	10	20
CHEWs	0	0	10	20	40	80
Traditional health practitioners	3	6	46	92	1	2
Public Health Officers	12	24	18	36	20	40
Health facilities	10	20	20	40	20	40
Administrative officers(chiefs)	19	38	31	62	1	2
Churches/Mosques	0	0	15	30	35	70
Radio	0	0	11	22	39	78
Television	0	0	8	16	42	84
Newspapers	0	0	5	10	45	90

Respondents were asked to indicate their level of awareness under specifications “very much aware, Aware, and Not aware”. Health information systems ranked under “very much aware” were administrative

officers 38 percent (19 of 50), Public Health Officers 24 percent (12 of 50), CHWs and health facilities 20 percent (10 of 50) while the rest fell below 10 percent.

A large majority were “aware” of traditional practitioners 92 percent (46 of 50), administrative officers 62 percent (31 of 50), CHWs 60 percent (30 of 50), and health facilities 40 percent (20 of 50) while the rest were below 39 percent. Majority 90 (45 of 50) percent were not aware of newspapers as health information systems, television 84 percent (42 of 50), CHEWs 80 percent (40 of 50), radio 78 percent (39 of 50), churches and mosques 70 percent while the rest were below 50 percent.

Further probing revealed that majority respondents were not aware of the newspapers, television and radio because of low literacy levels and poverty. The low awareness of the CHEWs is attributed to their coming to the scene during interventions and health campaigns. However, most respondents indicated knowledge of the available health information systems.

#### *Usage frequency*

Respondents were asked to indicate frequency of use of the health information systems. Table 2 represents a summary of the usage frequency of the identified information.

**Table 2: Information Systems Usage.**

Public Health Information System	Very Frequently		Frequently		Sometimes		Not at all	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
CHWs	0	0	0	0	30	60	20	40
CHEWs	0	0	0	0	9	18	41	82
Traditional health practitioners	20	40	15	30	10	20	5	10
Public Health Officers	2	4	15	30	22	44	9	18
Health facilities	10	20	16	32	15	30	9	18
Administrative officers(chiefs)	25	50	15	30	7	14	3	6
Churches/Mosques	0	0	0	0	5	10	45	90
Radio	0	0	0	0	11	22	39	78
Television	0	0	0	0	8	16	42	84
Newspapers	0	0	0	0	5	10	45	90

Findings revealed that 50 percent (25 of 50) received health information from the administrative officers very frequently, 40 percent (20 of 50), traditional health practitioners, and 20 percent (10 of 50) health facilities. Those who received health information from health facilities were 32 percent (16 of 50), from traditional health practitioners and public health officers 30 percent (15 of 50). Health information systems used sometimes were CHWs 60 percent (30 of 50), public health officers 44 percent (22 of 50), health facilities 30 percent (15 of 50), radio 22 percent (11 of 50) while the rest had less than a rate of 20. Majority respondents did not at all use newspapers and churches/ mosques 90 percent (45 of 50), television 84 percent (44 of 50), CHEWs 82 percent (41 of 50), radio 78 percent (39 of 50), while the rest were below 50 percent.

Results show that most respondents receive health information from administrative officers. This is attributed to the chiefs being appointed from these same communities, are well acquainted with their people, communicate in the language well understood and appreciated by the community.

They also attend funerals which normally attract large gatherings; it is therefore easier for either the government officials or public health officers to pass over public health information and education to the community. However, the time may not be sufficient to be exhaustive. CHWs carry out door to door visits to gather and disseminate health information. However, the households felt that as much as their work is important, they had no time for the process.

One respondent said:

*“The CHWs come when I have to go/gone out to look for small jobs so that I can fend for my family. I cannot waste time waiting/listening to them just to ask me questions and leave me without food for my family”.*

Traditional health practitioners were also among those used either very frequently or frequently. This is because they are well acquainted with the community, they share in beliefs and culture and also in case of treatment they are cheap. They can be paid using chicken, foodstuffs which one may not have easily found a buyer. Respondents reported that health facilities are expensive and at a distance. They only visit them in serious cases and the teachings normally take a short time, and mostly only the literate understand. Churches gather

many people, but the focus is about spiritual teachings. Respondents indicated that occasionally CHWs who are also members of these churches are given a chance to communicate if there is an immunization campaign going on in the area. Radio and television were ranked low since the area has only partially received rural electrification while newspapers ranked lowest because of poverty and low literacy levels. The division still relies mainly on oral communication from the government officials, which is normally a top down way of communication.

*Information Gathered by the Health Information Systems*

The study sought to find out the information gathered by the health information systems. The study interviewed 10 CHWs drawn from the entire sub-County. Findings revealed that CHWs used specific designed tools provided by the ministry of health in gathering data from households namely MoH 513, MoH 514 and referral books. Using MoH 513, they assign a code to a household, record the number of people in a household, if children under 5 years have clinic cards. This will enable the CHW to know the immunization status of the children because some families have traditional beliefs where they do not use conventional medicine.

They gather information on the nutritional status through observation, identify any skills within the family particularly if anyone has an idea on what to do in case of an emergency in the family, condition of sanitation, mosquito net use, record any chronic illness and HIV/Aids status. Identify if there are Orphaned Vulnerable Children (OVCs) in the household, disabled persons, availability of food, level of education, any deaths that have occurred most recently and the cause, if they have birth certificates and any gender-based violence.

Besides collecting information, CHWs with their basic knowledge advise households on health issues, refer cases that need medical attention to health facilities and in cases of defaulting or uncooperative households they refer them to the CHEWs and chiefs. MoH 514 is used to record health issues only summarising all the information gathered in MoH 513 including the number of referrals and defaulters. The complete report (tools) is submitted to the CHEWs on a monthly basis for evaluation and action. Findings revealed a comprehensive health information gathering through the use of MoH 513 and MoH 514 tools used by CHWs in Elburgon division, Nakuru County, Kenya.

*How the information gathered relates to decision making in the health facilities*

Interviews conducted with 6 CHEWs drawn from two government and one faith-based hospitals showed that the information gathered informs the decision taken by the link health facilities. In cases where diseases outbreaks are reported the health facility takes the initiative of conducting a medical campaign in the affected areas. The information forms the basis for immunization decisions such as polio. However, the respondents revealed that response to the information takes long either because of lack of staff or funds leading to people dying of ailments that would have been prevented/ treated within Elburgon division, Nakuru County, Kenya.

*Effectiveness of PHIS in promoting primary healthcare in Elburgon division, Nakuru County*

Respondents were asked to rank the effectiveness of PHIS in promoting primary health care within the community. This question was posed to all the 66 respondents in the study.

**Table 2 Effectiveness of Public Health Information Systems (PHIS).**

Public Health Information Systems	Very Effective		Effective		Fairly Effective		Not Effective	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Administrative officers(chiefs)	25	50	15	30	7	14	3	6
Traditional health practitioners	20	40	15	30	10	20	5	10
Public Health Officers	2	4	15	30	22	44	9	18
Health facilities	10	20	16	32	15	30	9	18
CHWs	0	0	20	31	15	23	30	46
CHEWs	0	0	18	28	25	38	22	34
Churches/Mosques	0	0	0	0	0	0	65	100
Radio	0	0	0	0	0	0	65	100
Television	0	0	0	0	0	0	65	100

Newspapers	0	0	0	0	0	0	65	100
------------	---	---	---	---	---	---	----	-----

Results showed that the PHIS overall were not very effective, only 50 percent and 40 percent of the total households interviewed felt administrative officers and traditional health practitioners respectively were very effective health information systems. Besides the government relying on CHWs and CHEWs, only 31 percent and 28 percent respectively reported that they were effective. CHWs are trained to carry out their duties but they lack the capacity to offer the immediately needed services such as treatment besides gathering and disseminating health information. They make referrals which require the community needy community members to go to health facilities which are far, with long queues and require payment for some services. This results in defaulting, deaths occurring hence an ineffective system. CHEWs make follow ups in cases of defaulters and uncooperative households and also make referrals to specialized health facilities in some cases.

The CHEWs also attend to patients in the health facilities and use the opportunities to enlighten those who visit the facilities. The CHEWs and CHWs showed that their strategies were effective because it is upon their information that action is taken by the MoH. Most respondents (households) ranked the information systems “Not Effective”. This was attributed to the fact that they experience high death rates because of inadequate health information.

Findings revealed that people in Elburgon division were aware of the public health information systems in place but they did not use them because of low literacy levels, busy schedules to fend for their families and lacked time to attend health teachings. Information systems like the radio, television and newspapers were reported to be completely not effective because the majority of the community did not own them and those who owned radios could not regularly afford buying batteries. Newspapers were not effective at all because the community could not afford to buy, and also had high illiteracy levels. In general, results showed that the public health information systems were not effective in promoting primary healthcare in Elburgon division, Nakuru County, Kenya.

*Challenges affecting collection and dissemination of health information*

This study established numerous constraints that affect the collection and dissemination of health information in promoting primary health care in Elburgon division, Nakuru County, Kenya.

- ✓ While CHWs undertook their responsibilities with an understanding that it was on a voluntary basis, they had their own expectations regarding rewards and incentives which should be provided by the programme, resulting in lower working morale and reduced retention rate. Limited resources to enable the functionality of CHWs. This is evident because facilities such as bicycles, CHW KIT are not adequately supplied yet important for effective functioning.
- ✓ High turnover of CHWs due to low motivation as a result of insufficient supportive supervision, lack of incentives and recognition as well as inadequate materials.
- ✓ Inadequate CHEWs to make follow-ups on cases reported by CHWs and persistent health personnel strikes
- ✓ Inadequate funding by the government to support primary healthcare in rural areas
- ✓ High poverty levels within the community resulting in poor hygienic living conditions that expose them to numerous communicable diseases.
- ✓ Low literacy levels. Although the government has implemented free education, the majority do not attend school because of several challenges including lack of food, clothing and proper shelter.

*Relevance, Impact on Policy and Practice*

The study identified the public health information systems used in collecting and disseminating health information in Elburgon division of Nakuru County, Kenya and suggested ways which the health sector could adopt to improve their functionality. This would be useful in the planning and management of health information systems in the division. The results of this study would also be used by health professionals in other Counties in rural areas and decision makers in the health sector in the transformation/ re-designing of health information systems to enhance their effectiveness and efficiency in service delivery.

*Recommendations for Policy and Practice*

- i. There is a need to explore non- financial incentives for CHWs that are performance based such as reduction in deaths, HIV/AIDs prevalence, increased condom use in their communities before considering financial incentives.
- ii. Training of CHWs should be re-designed and be conducted in phases, spread over a time and covering more content. This will bring about a high retention rate because of anticipation for further training and probably develop a career path.

- iii. There is a need to ensure that all trained health workers are to be CHEWs working with community health strategy.

## V. CONCLUSION

Human life has been threatened ever since ancient times with diseases of all kinds both in the developed and developing countries. There is evidence that developing nations such as Kenya have a big burden of disease. Similarly, they have fewer health professionals and also spend a smaller proportion of the budget on health. Despite efforts by both government and non-governmental organizations, the goals to curb diseases have not yet been achieved. The WHO and UNICEF goal set in 1978 of having 'Health for all by the year 2000' is still a challenge. There are still high death rates resulting from various ailments and new diseases are emerging, others becoming resistant to treatment. The Public Health Information Systems in place have failed in effectively disseminating health information that would promote healthcare in rural communities with particular reference to Elburgon Division, Nakuru County, Kenya.

### General Recommendations

- i. Public Health Information should be repackaged into other formats such as pictorial, films/video, theatrical in the form of drama, poems and songs so as to create a lasting impression on people's minds.
- ii. Public Health Information issues, education, promotion among others should not be the concern of health care professionals alone but a concern of everyone.
- iii. Incorporate Public Health education in the school's curriculum so that sensitization may begin at an earlier level of education. This will improve the community's ability to understand Public Health Information and influence interest to seek and use Public Health Information that forms the basis of PHC.
- iv. The government should increase its budget allocation to enable PHOs acquire teaching materials for PHE within the communities
- v. The government together with the NGOs should set up Information Centers within Elburgon division with collections for PHI among other collections so that people can refer to the documents themselves.

## REFERENCES

- [1] Adetokunbo, O. L. & Herbert, M. G (2005). Short textbook of public health medicine for the tropics, 4<sup>th</sup> ed. : London: Edward Arnold
- [1]. Alirol, A. et al. (2011). Developing effective chronic diseases interventions in a globalized world. *Lancet infect. DIS* 11(2); 131-41
- [2]. Babbie, E. R. (2007). *The basics of social research*, 4<sup>th</sup> ed. : Wadsworth Publishing
- [3]. Detels, R. et al. (eds) (2002). *Oxford textbook of public health*, 4<sup>th</sup> ed. Oxford: Oxford University Press
- [4]. The East African Journal of Public Health: vl. 3, no. 1 (2006) available at <http://www.ajol.info/viewissue.php?jid>. Accessed on 23<sup>rd</sup> August 2014
- [5]. Grol, R. et al. (2005). Improving patient care: the implementation of change in clinical practice. Edinburg: Butterworth
- [6]. Hongoro, C. & Mcpake, B. (2004). "How to bridge the gap in human resources for health". *Lancet* 364 (9443): 1451-6.
- [7]. Kimalu P. K. et al. (2004). A review of the health sector in Kenya. Social sector division: Kenya Institute for Public Policy Research and Analysis (KIPPRA working paper no.11).
- [8]. Lankester, T. (2002). *Setting up community health programs: a practical manual for use in developing countries*, 2<sup>nd</sup> ed. : McMillan Publishers
- [9]. Lozano R. Et al. (2012). Global and regional mortality from 235 causes of death for 20 agroups in 1990 and 2010: a systematic analysis for the global burden of disease study 2010. *Lancet* 2012; 380: 2095-128
- [10]. National Development Plan (1997-2001). Nairobi: Government Press
- [11]. Ministry of Health. (2006). Taking the Kenya essential package for health to the community: a strategy for the delivery of level one services Government Press
- [12]. Ministry of Public Health and Sanitation. (2010). Analysis of overall health system. Ministry of Health
- [13]. Public health information system catalog user guide available at <http://toolbox.airws.org>. Accessed on 5<sup>th</sup>Sept. 2014
- [14]. Studnicki, J. et al. (2011). Using information systems for public health administration: Jones and Bartlett publishers World health Organization (2008). *World Health Report 2008*. Geneva: WHO Press.