

University of the Western Cape
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**An Exploration of the Prevailing Perceptions on the Role and Skills of
Environmental Health Officers regarding the Prevention of Cholera Outbreaks in
Lusaka District**

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A mini-thesis submitted in partial fulfillment of the requirements for a Master's Degree
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Officers regarding the Prevention of Cholera Outbreaks in Lusaka District

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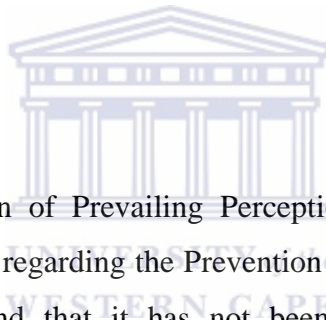
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Declaration

I declare that 'An Exploration of Prevailing Perceptions on the Role and Skills of Environmental Health Officers regarding the Prevention of Cholera Outbreaks in Lusaka District' is my own work and that it has not been submitted for any degree or examination by any other University. All the sources that I have used or quoted have been indicated by complete references.

Hilary Moono Chibiya

May 2009

Signed.....

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ACRONYMS

1. CBE	Community Based Education
2. CHAZ	Churches Health Association of Zambia
3. CHW	Community Health Workers
4. EHE	Environmental Health Expert
5. EHO	Environmental Health Officer
6. FGD	Focus Group Discussion
7. GMP	Growth Monitoring Points
8. IEC	Information, Education and Communication
9. JICA	Japanese International Cooperation Agency
10. LUDHMT	Lusaka Urban District Health Management Team
11. LUWASE	Lusaka Water and Sewerage Company
12. MLGH	Ministry of Local Government and Housing
13. M o H	Ministry of Health
14. MSF	Medicins san frontiers
15. NAZ	National Assembly of Zambia
16. NWASCO	National Water Supply and Sanitation Council
17. PBL	Problem Based Learning
18. PHAST	Participatory Hygiene and Sanitation Transformation
19. UNICEF	United Nation International Children's Fund
20. WEDC	Water Engineering and Development Centre

Abstract

Background

Cholera outbreaks have almost become a norm in Lusaka district with the onset of rains. The disease forms part of the preventable diarrhea diseases that have greatly contributed to the high morbidity and mortality rates especially in children under five. In an effort to mitigate the recurrence of cholera in the district of Lusaka, various strategies have been employed to resolve the crisis. However none have investigated the skill or capacity of the public health officers involved in health promotion and disease prevention, themselves. Therefore in this study, focus is turned on one of the integral officers in this public health arena who seem directly involved in preventive health, the Environmental Health Officers. The aim is to clarify their role and skills capacity with the hope of initiating a process of developing appropriate skills and therefore positively contribute to the fight to contain cholera outbreaks.

Study Design

This is mainly a qualitative descriptive study that seeks to gain insight into the problem EHOs in Lusaka may be facing in averting cholera outbreaks by exploring in-depth, their attitudes, beliefs and values concerning their role and capacity with consideration to the training they receive to prepare them for their role. The sample was drawn from the EHO's from 26 health centers under the jurisdiction of the Lusaka Urban District Health Management Team (LUDHMT).

Data Collection

Data was collected from the EHOs through focus group discussions to scrutinize how their knowledge and experience interact in their setting. Consequently, a few follow-up EHO interviews were done for further clarification of recorded data. Face to face, semi-structured interviews were conducted with their supervisors as well as EHO trainers from the two local colleges concerned with EHO training.

Analysis of Results

A qualitative approach to data analysis was employed which commenced during data collection through member checking to comparing, coding, categorizing and seeking meaningful interpretations of emerging themes.

Discussion and Conclusion

While the EHOs' perceive themselves essentially as promoters of environmental health, this study discovered that they dwell more on control measures in the matter of cholera out breaks. Even though they feel confident to contain an outbreak they expressed a lack in the level of skills they possessed to enable them to monitor, evaluate and consequently get rid of the all the factors that cause the disease to recur. Inevitably with this lack of self-assurance to eradicate cholera they seem resolved to focusing their resources to adequately prepare for the control of cholera than its prevention, instead. Very importantly, it was found that both policy development and training are to lagging behind the demands of the EHOs current role and their work is hindered by lack of funds specific to prevention activities complicated by an unhealthy donor dependency. There also is a need for all the key players in the environmental Health arena to appreciate the shift in the role of an EHO from the former traditional responsibilities because the incidence of cholera could keep recurring unless all these stakeholders could join forces in training and supporting the EHO appropriately.

Chapter one: Introduction and Background of study

1.1 Introduction

In the presence of diseases such as HIV-Aids, Tuberculosis and Malaria, issues related to Cholera seem to have taken the back seat of the world's health agenda. Yet there are increased concerns regarding the burden of this disease, especially in low income countries. Cholera's significance on the international scene is such that it is one of the diseases that the World Health Organization (WHO) requires notification of under the International Health Regulations. In the year 2001, a total of 58 countries notified WHO of 184 311 cholera cases and 2 728 deaths (WHO, 2008). This case-record was said to have exceeded the previous year by a third in number indicating an upwards trend in the incidence of this disease. In Zambia, the highest number of cases was recorded in 1999 when 13,154 people were reported sick from cholera (Medical News Today, 2004). More countrywide outbreaks were recorded which included the capital city, Lusaka.

1.2. Cholera

Cholera is a disease caused by the bacterium *Vibrio cholerae* which often results in diarrhea (Cheesbrough, 1984) and because it is transmitted via the fecal-oral route, it has been linked to contaminated water or food especially where poor sanitation facilities exist (Twedt *et al*, 1984, Sasaki *et al*, 2006) such as is in the densely populated and unplanned settlements in Lusaka (Mukumbira, 2007).

The disease has been noted as one of the major causes of diarrhea in Zambia especially in the peri- urban communities of Lusaka. Regrettably, it contributes to an already alarming statistical record of which diarrhea causing diseases have been known to account for a third of the out-patients visit to a hospital and have been recognized as the sixth major cause of death in children (Mudgal, 2002). According to a statement given by then Minister of Health to the National Assembly session of February, 2006, Cholera outbreaks were said to have began in Zambia in 1977 (NAZ 2006). Although then restricted to the northern part of the country, in the lake region, the disease has since 1990, spread to the rest of the country causing at least six outbreaks nationwide inclusive of Lusaka. According to the ministerial statement, the 1991-92 and 1999-2000 outbreak

seasons had the highest number of admissions recorded countrywide (11,615 admissions in 1999-2000) with a case fatality that ranged from 2.3% - 3.0%.

Most of these cases of cholera related diarrhea have been associated with rapid urban migration which has resulted in the mushrooming of unplanned settlements of low income communities without adequate water supply or good sanitation (Sasaki *et al*, 2006). Since some of these peri-urban settlements or compounds as they are referred to, were classified as illegal by civil authorities, they were not prioritized in terms of water supply and sanitation. As a result, the residents resorted to digging shallow wells in their back yards as provisional water sources and put up pit latrines for convenience but due to the population density of these areas, there is hardly space between dug out wells and pit latrines. Sanitation officers recommend that there be a distance of thirty meters between latrines and water sources (Osofu-Barko, 2000) which is ideal in preventing underground cross contamination. Unfortunately, the prevailing structures of these mentioned communities make promoting components of Primary Health Care (WHO, 1978) such as prevention of disease and promotion of a healthy estate a challenge.

Sadly, the city of Lusaka has a largest expanse of these peri-urban settlements in the country. During the November 2003 to January 2004 rainy season, Lusaka experienced a total of 2,529 cholera cases and 128 people died as reported in an article by Medical News Today (2004). In response, the Zambian Government, through Lusaka Urban District Health Management Team (LUDHMT) requested an independent investigation. The results of this study showed that the last cholera outbreak had been a result of contaminated raw vegetables and that hand washing was significantly protective against cholera. This was a slight departure from the preconceived belief that cholera was always waterborne. It also revealed the need for investigative public health methods in dealing with outbreaks.

By the year 2006, following another cholera outbreak season, the then Minister of Health in a ministerial statement to the National Assembly called for a build up in interventions which cost billions of the Zambian kwacha (NAZ, 2006). Proposals were made to intensify the already existing strategies which included inspections of public places such as markets, restaurants, abattoirs and drinking places by Environmental health officers. Other strategies mentioned were the collection of garbage, house-hold chlorination and

liming of pit latrines. The strategies mentioned in the statement were not limited to Lusaka alone but extended to other affected areas, nationwide. Unfortunately, the incidence of cholera continued up to present time affecting mainly the peri-urban areas of Lusaka district.

1.3. Tackling Cholera

In tackling the issue of cholera, two approaches have been employed, that of prevention and managing an outbreak. Although literature does provide emphasis on the prevention aspect, most implemented projects in the low-income countries have focused on measures of cholera control which include case management, increasing laboratory capacity and environmental control which are essentially responses to outbreaks (WHO, 2004).

In contrast, measures of prevention, which are often more subtle and long term in impact, seem to have received less support. These include improving water quality, food safety, proper sanitation and promoting health education. Even though these mentioned cholera prevention strategies were also prompted by past incidences of cholera, at least they focus more on avoiding the disease or its recurrence. They also address the basic public health requirements of various communities where the disease has been prone.

It is obvious in the current public health cycles that most diarrhea related diseases such as cholera require multi-disciplinary cadres from the health sector, other government line ministries and community participation. More importantly the achievement of a reasonable and acceptable level of success in upholding public health requires public health officers who are well trained and skilled for their environment. In this study, we shall center on one of these cadres, the EHO in order to clarify their role and prevalent skills for cholera prevention.

1.4. The Environmental Health Officer¹

Environmental Health Officers are authorized by the Minister of Health to monitor and ensure that public health is upheld (Food & Drugs Act, 2001). They are guided by the

¹ For consistency in this study, Environmental Health Officers applies to Environmental Health Officers (EHO's) and the Environmental Health Technologists (EHTs).The difference between the two being in their training in that the EHO's have managerial skills included to their syllabus.

Public Health Act of 1930, and the Food and Drugs Act of 1972. Their main task is to ensure that the public has safe water, food and proper sanitation which are cardinal in health promotion.

The role also extends to the control of the environmental health standards of general premises including housing, disposal of the dead, vector and rodent control, occupational and industrial health and promoting community participation (MoH, 2005)

In the district of Lusaka, the EHOs are under the jurisdiction of the Lusaka Urban District Health Management Team (LUDHMT). They are supervised by the Environmental Health Expert (EHE), and are assigned to the various health centers within Lusaka district.

However, the EHOs do not work alone. They have had to partner with other sectors of government in most cases in an attempt to have a multi-sector approach to prevent cholera outbreaks. These range from Ministry of Local Government and Housing (MLGH) who in conjunction with local authorities related commercial utilities that provide water and sanitation services, to the Ministry of Energy and Water Development who, through the National Water and Sanitation Council (NWASCO), regulate the service providers (Nwasco, 2005). The Ministry of Health (MoH) plays the greatest role.

In partial response to the outbreaks, the National Environmental Health Policy was put in place with government stressing water supply and monitoring as priority areas (MoH 2005). It has through the MoH established at national level (and decentralized to every district) an Epidemic Preparedness Committee that is said to attempt to go further than preventive measures but to also control the spread and the impact of any cholera outbreak by means of a multi-sector and multi-disciplinary approach. The most recent interventions were done in conjunction with MLGH by means of liming of pit latrines and intensive promotion of household level chlorination (NAZ, 2006). Also included were health education, garbage collection and inspection of public places, markets, abattoirs and bars by EHOs. However, even with these interventions in place cholera in Lusaka district seems pervasive evident by its recurrence which has raised concern even among members of parliament in the current National Assembly (NAZ, 2009).

Of interest as well is the fact that the MoH in its strategic plans (MoH 2004) included the strengthening of environmental health action through improved human resource skills

and performance as intervention measures in epidemic control but whatever steps, if any were taken to effect this, did not alter the recurrence of cholera in subsequent years. There is need therefore to explore the training offered to improve the skills as well as the interventions from the perspective of the EHOs.

1.5. Problem Statement

In November 2003, there was an outbreak of cholera in Zambia (IRIN, 2007), which reportedly affected 2,707 people countrywide, and claimed the lives of 80 people in the city of Lusaka alone. Three years later, a second outbreak occurred and the situation reportedly worse as 5,557 cholera cases were declared, of which 151 people died (MSF, 2006). The interventions that were implemented in the rainy season of 2005-2006 (NAZ, 2006) added up to a cost exceeding K2 billion (approximately \$ 500,000). It is assumed that this amount could have been saved or at least reduced through preventive action.

It was expected that EHOs stationed in the affected areas in Lusaka should have played a crucial role in averting the outbreaks, or at least reducing the magnitude through proactive preparations. However, this was not the case. While some intervention measures were put in place, such as promotion of house hold chlorination, the problem recurred (Sinkala *et al*, 2004). This indicates that EHOs were not successful in their endeavors for reasons which were yet unclear.

Therefore this study proposed to understand what training EHOs receive to prepare them for their role in cholera outbreak prevention and what they perceive their role to be, with the aim to possibly review EHO training in Zambia and provide role clarification.

1.6. Aim

To investigate perceptions of EHOs and some key stakeholders regarding the role and skills of EHOs in prevention of outbreaks, with reference to the cholera outbreaks in Lusaka's peri-urban district.

1.7. Objectives:

1. To verify what skills the EHOs believe they attained in their formal training, as regards to cholera prevention.
2. To explore what EHOs perceive their role is in averting cholera in Lusaka district.

3. To determine what role EHOs should play in cholera prevention according to the views of the EHOs' supervisors and trainers
4. To determine which skills EHOs should possess in cholera prevention in Lusaka district, according to the views of the EHO supervisors and trainers.
5. To identify factors that the EHOs supervising officers perceive to be lacking in their officers in averting cholera in Lusaka district.
6. To determine what kind of support EHOs need to effectively achieve their duties in cholera prevention in Lusaka.

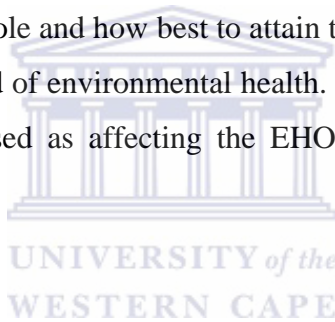
This mini-thesis has six chapters. The first chapter covers a brief introduction which gives the background of the study, the motivation and the problem statement. It also includes the objectives which were pursued. The second chapter explores the available literature to determine the role of EHOs in other countries by searching for information regarding the role definition, skills and training of EHOs in relation to the prevention of Cholera outbreaks. Chapter three explains the choice opted for in the study's methodology and design It is followed by the forth chapter where a narrative of the results obtained is given. This study's findings are discussed in the fifth chapter and the conclusions drawn are shared in the last chapter of the study.

Chapter Two: Literature Review

2.1 Introduction

A delve into the few studies that have been done regarding the responsibilities of EHOs in the developing countries, makes one note that their role has undergone some metamorphosis. This must be due to change in what existing governments demand and perceive an EHO's responsibility to be. In some cases, this is influenced by new environmental or public health laws that have been the result of donor funding that has specific conditions. In some cases it is the change in the policies that govern public service providers altering them to a government and private service provider amalgamation that has inevitably led to EHOs instituting a new approach to their function in the community.

This chapter investigates the shift of EHO roles from old to the current role, addressing the skills required in this new role and how best to attain them based on suggestions made by other researchers in the field of environmental health. It additionally, covers two other factors that we had presupposed as affecting the EHOs role and effectiveness in the community.



2.2. The old Role of an EHO

Like many other health professions, the profession of environmental health in Zambia, like in most other African countries, has been fashioned within a Western European paradigm which colors what EHOs do and how they are trained to this day (Frumkin, 2005).

Early in the 20th century, matters of environmental health in Zambia were under the jurisdiction of the District Commissioners who were primarily the local authorities of the emerging towns. Their role in public health stretched from maintaining clean surroundings and fields to ensuring that there were wells for water supply (EHE, 2008). However by 11th April 1930, the Public Health Act was enacted and gave that authority and more, to the Minister of Health who through the Director of Medical Services (and his officers, the health inspectors) implemented the tasks associated with the office.

According to the Public Health Act (1930) and the Food and Drugs Act (2001), the Health Inspectors (the predecessors to environmental health officers and technologists)

had tasks then which were centered on inspecting public structures, abattoirs, food processing plants and suppliers, to ensure that public health laws were not violated. Any defaulters were given notice and if defiant were taken to court and their licenses withdrawn. This trend in environmental health was not only confined to Zambia though, but other African countries as well, such as Ghana where EHOs, performing similar tasks gained the name 'samman-samman' meaning 'summons- summons' due to what the community perceived to be a relentless bent of harassment by these officers in summoning the defaulters to court (Crook and Ayee, 2006). These particular EHOs were additionally involved in enforcing public health laws by checking compliance of food vendors, schools and abattoirs. Their role extended to awarding permission and supervising the construction of pit latrines. It is such activities that defined the traditional role of an EHO.

Other traditional roles of the Health Inspectors (or EHOs as referred to now) in Zambia, extended to disease 'prevention' which was characterized by confining any infected person, port controls and inspection of public transport such as trains to ensure that there were no infected persons aboard (Public Health Act, 1930). Their role included the seizure of any unwholesome foods deemed to be a public health threat.

The coming on board of the Environmental Health Policy of 2005 (MoH, 2005) did not change the role of the EHOs greatly in theory, but did seem to recognize the need for the participation of the targeted communities and this must have compelled the policy makers to include an aspect of rallying community participation as one of the responsibilities among these shown below:-

- Carrying out public sanitary inspections and abatement of statutory nuisances.
- Ensuring the safe disposal of the dead by locating cemetery space which will not disturb the quality of underground water systems.
- Ensuring an environmental friendly vector and rodent control as is in the case of malaria control by eliminating mosquitoes through household spraying.
- Ensuring that workers occupational health is safeguarded. The main target is the mining industry where it was admitted experienced duplication of tasks in this area.

- Promoting community participation in environmental programs such as the keep Zambia Clean Campaigns as promoted in 2006 (NAZ, 2006).

2.3. New role of the EHO

With the passage of time, it seems that governments have been seeking means of improving service provision within local communities and have felt that adopting new policies which engage a range of participants within the same communities could be advantageous. Without doubt this process of change has influenced the role defining activities of the affected public officers such as the EHO who are involved in environmental service provision. A classic example is that of the Ghanaian government and its new policy in the environmental sector.

Ayee and Crooks (2006) in their research regarding urban service partnerships focus on the changes that occurred and affected the traditional role of EHOs in Ghana. The researchers felt that the Ghanaian government's policy changes were influenced by the ideologies of Osborne and Gabler (1992) who advocated for a change in the responsibility of the state, especially in developing countries, to move from the position of 'rowing to steering' service provision in the country. In other words, it was suggested that government need not necessarily do all the work but could involve others who would move in the same direction as they would to attain the desired goal. This ideology, according to Ayee and Crooks, was given propping by other researchers such as Minogue (1998) and Bartley & Larbi (2004) who also pressed for the public service to transform itself into a more results oriented organization focusing on improved performance than concentrated effort in the process of providing a particular service.

To illustrate the point, Crooks and Ayee (2006) point out a few factors that instigated change in the role of EHOs as a result of changes in government policy, with reference to the new environment sanitation policy of Ghana which initiated the privatization of environmental services. It paved the way for other sectors such as community based micro-businessmen to control areas such as waste management, cleansing and sanitation, latrine and septic tank emptying and to seize up contracts that would provide environmental health services. Finally this government policy also advocated for the decentralization and re-organization of the EHO service.

The major shift in responsibility for the EHOs was the need to adapt to a foreign concept of being a public health advisor who had to befriend members of the community so as to pave way for the initiation of voluntary community participation as opposed to their former zeal in searching and charging defaulters. The pressing challenges of this task were of an officer integrating oneself into the community politics and to create platforms to adequately train community leaders in environmental health.

In Ghana, this new role was further complicated when the EHO services were decentralized and placed under another government department which did not fully appreciate the significance of the EHO service. This also ended up redefining the role of the EHO.

The transition of the EHOs role from fault finder to a facilitator of public health in the community is not limited to Ghana but is also reflected in other countries as shown in the following examples from Water, Engineering and Development Centre (WEDC), a body concerned with the water supplies development in low income countries (WEDC, 2001):- The studies suggest that in most cases the EHO is now called upon to be a liaison officer between the Ministry of Health and the community. He is an extension officer transforming public health policies into community development. An example of this is demonstrated in a study where the EHOs are involved in improving water sources and health by assisting members of the community in the application for water supply in their village (Sampa and Ball, 2001).

EHOs are furthermore involved in water and sanitation program development. They determine the location of new water points in the community and identify the vulnerable groups (Mckie *et al*, 2006). This role requires a needs-assessment skill, and an understanding of the community's socio-cultural dynamics.

EHOs also monitor water quality and its usage in the community. The EHOs therefore has to determine the most frequently used water sources and their uses. Such information would become crucial in the determination of the source and appropriate control measures during an outbreak.

Very importantly, EHOs also function as health educators involved in the promotion of participatory hygiene and sanitation transformation, using tools that mobilize the community to work out solutions to their problems regarding water safety and sanitation

(Makweyane & Dau, 2001, Sasaki *et al*, 2006). This role calls for skill as communicator, as well as an understanding of the social structures and traditional beliefs, if effective transformation in behavior is to be attained in the community.

It is obvious then that these new responsibilities require appropriate training to prepare EHOs for roles which respond to local community needs.

2.4. New Role demanding innovative skills training

The World Health Organization has recognized the need for training which encompasses health officers at all levels in a district with emphasis on upgrading skills in epidemiology, statistics and computing (WHO, 1994). While this is indeed essential, the list of skills to attain should not be limited to only these few. As illustrated by Crooks and Ayee (2006) EHOs also need fluent legal skill which will make them conversant in the public health laws and ultimately achieve success in courts when dealing with defaulters. They also must have the ability to supervise and rally reluctant people to community participatory actions. As public health advocates they are also required to have the ability to interpret the public health policies and translate them to practical activities in the community as shown in Sampa and Ball studies (2001) where EHO's assisted community members to apply to the relevant authorities for water supply. As water quality monitors, EHOs need the technical skill in water sampling and the interpretation of analysis results and especially the ability to choose appropriate remedial actions. To achieve success in the health education promotions mentioned in the Environmental laws and policy, the officers require capability to teach in a given locality using appropriate tools. To achieve this, EHOs require suitable training tailored for their current role demands. This leads to a look at the current training orientation in EHO training institutions.

2.4.1. Concerns on Current training orientation

A look at studies done in the area of EHO training reveal that the issue of whether EHOs trainers are conversant with the emerging responsibilities and are imparting the needed knowledge to the EHOs is debatable. Researchers such as Emehorale (1993), claim that the current institutional training is inadequate as it has failed to impart the relevant skills to the EHOs therefore rendering them unable to monitor and evaluate environmental

health strategies. As far as he is concerned, the curriculum lacks enough “credit weight” to be of sufficient value to the skills needed by the EHO. He further suggests that it is such circumstances that place the EHOs in the Anglo speaking West Africa at a disadvantage as most universities are not keen to take them on for further studies when they lack sufficient training.

Two reasons for the lack of appropriate content in training curricula lie in the fact that these curricula are still informed by old professional paradigms and the fact that trainees are not exposed to practical training methods adapted to the current needs. This is what other researchers such as Rugumayo (Rugumayo *et al*, 2005) and Kitagwa (2007) suggest. They imply that the idea of EHOs being able to cope and adapt to the new role seems unachievable as long as the curriculum of most EHO institutions is still based on the old role expectation of the traditional EHO reflecting the influences of the developed world’s Health inspector and not adapted to the current local public health needs (Rugumayo *et al*, 2005, Kitagwa, 2007).

Specifically in his study presentation, Kitagwa, (2007) expressed concern about the educational programs for EHOs in Africa, which he felt were tailored more for an industrialized country’s public health system and therefore fell short in imparting the required skills to EHOs in Africa. He regarded this situation as an anomaly because the major health problems in the industrialized communities are different to those that are pertinent in Africa where it is the communicable diseases which are more prevalent due to inadequate safe water, poor hygiene and sanitation (Kitagwa, 2007). The author notes that for this reason most environmental health graduates lacked the necessary skills and tools to address the unique health challenges in the communities they serve as illustrated by their inability to assess health priorities, appropriate promotions, or proper evaluations of their community activities.

Rugumayo *et al*.(2005) attested to the same based on the findings of their study in Uganda which focused on the relevance of the current training approaches to the work that was carried out by the sanitary sector in that region. The investigators got reports from their study participants which implied that the institution offering training for the EHOs and the Water Engineers, had excluded certain components such as research techniques which they perceived necessary to their work. The researchers also noted that

contrary to the usual modes of technical training, where illustrations and demonstrations are expected, the students received notes and references for the subject of study instead. This meant that they were given more theory than the practical aspect of the problems they would face in the community. Rugumayo *et al.* 2005) conclude by recommending that participatory training skills should be promoted as they yield better results and that EHO trainees should receive basic research skills at this stage of training.

Perhaps one would borrow this phrase from the field of pharmacotherapy, and apply it to EHOs:-

“...There are proven strategies to improve the quality of... teaching. Probably the most important is to develop teaching objectives based on the knowledge, skills and attitudes required by students in their future professional life...problem solving skills should be promoted and interdisciplinary problem based learning encouraged...” (Laing *et al* 2001:16)

It would seem then from the studies mentioned above that the probable answer to appropriate training of EHOs is not only the content but also the mode of training. It is the innovation of a relevant content packed curriculum that synchronizes practical training approaches matching the current public health demands on the EHO role that would avail the necessary skills to an EHO. For one researcher, Kitagwa (Kitagwa, 2007) this innovative type of training is what he refers to as community based training and problem based training.

2.4.2. Community based and problem based education

Kitagwa (Kitagwa, 2007) explains the community based training and problem based training as a change from the classroom theory to hands on problem-solving in the daily activities of a community. In contrast to classroom theories, Community based education obliges the trainee to experience working in the environment of one's future employ by residing and functioning within a specific community for a specified period. The trainee inevitably gets first hand knowledge of the challenges of his role in that area, the social structures at work and the occasional limitations of a bureaucratic public health system.

Meanwhile as the trainee with the help of lecturers analyzes and develops relevant interventions for the simulated community crises, problem solving skills are learnt through dealing with the challenges to be faced in future employ.

In his study, Kitagwa (2007) suggests that when training institutions incorporate Problem Based Learning (PBL) and Community based education (CBE) to achieve 'health educational relevance to community needs', the life challenging situations encourage students to go through the process of discovering the solutions and therefore promotes an investigative approach to learning and the attainment of relevant skills. As for community based learning, he suggests that the trainees reside within the community itself during practical attachments so that the student can form links with the community and other health workers therefore making it easier to work in this environment upon graduation. Interestingly, it has been realized that the problem based methods of training have been adopted more by in-service education systems and that they tend to yield better results in terms of training effectiveness because of the focused on-site and small group type of training methodology.

Laing *et al* (2001: 16) refer to one such mode of training in the field of health in Zambia. It is reported that a randomized study was done to evaluate the impact of three continued education seminars for members of staff from general urban health centers. The centers that had received the intervention training registered major improvements denoted by a decrease in average prescription of drugs, better record -taking, treatment and reduction in antibiotic use. Laing *et al* (2001) further emphasizes that repetitive, practical skills focused, interactive education was the most effective for intervention training especially in developing countries.

The importance of adapting training tools to suit a local setting is not only effective for intervention but could also encourage workers to enhance their input after observing an achievement of positive or desired results. A study by Ruck and Darwish (1991) proved this aspect. The study conducted in Egypt demonstrated that Egyptian health workers in the field of nutrition changed the training tools for the community to suit the local environment. The resulting affirmative impact encouraged the health workers to work harder. The consequence was a substantial increase in the quantity of nutrition activities as well as the quality.

2.4.3. PHAST program – an example of community/problem based training

Interestingly, it has been shown that a combination of community improvement and problem solving can be a resolution in terms of sustainable community development and decrease in diarrhea cases through programs such as Participatory Hygiene and Sanitation Transformation (PHAST). This is a community development methodology (befitting the community and problem based training of both community members and the EHOs) that was developed by the Water and Sanitation Program, the World Bank and WHO in conjunction with sector partners in the Africa region (Sasaki *et al*, 2006). The methodology is based on utilizing the community's self esteem, recognition of its associative strengths, resourcefulness, implementing action planning and uptake of responsibility as factors integral to community mobilization for development. Due to the perception that it is a better means of scaling up hygiene and sanitation programs in communities, it was introduced as one of the strategies of strengthening environmental health action to reduce the disease burden by the Ministry of Health (Zambia) in its Mid-Term Report of the National Strategic Plans for the year 2001 to 2005 (MoH, 2004:36). According to the same report, efforts were underway to develop PHAST training materials and EHO representatives from 22 out of the country's 72 districts had received what was a training-of-trainers training. Also included in the plans was the rehabilitation of a Health Demonstration Zone centre as a PHAST training center for the whole country but this did not occur due to lack of funds.

The advantage of such hands-on, on-site, problem based training is illustrated in training of EHOs in a PHAST program conducted during a project conducted by Sasaki *et al* (2006) in some of Lusaka's peri-urban areas.

The training occurred at six sites (Lusaka's peri urban areas which were more prone to diarrhea cases especially cholera) in 2003. During training visual tools adapted to the social and cultural dynamics of the local setting were used. Participants were encouraged to identify and analyze their own community priorities. The participants chose lack of safe sanitary facilities, poor drainage and inadequate health and hygiene as their priorities for preventing diarrhea cases in their area. PHAST workshops enabled the rallying of

community members to construct toilets, drainage systems and raise awareness on the causes and prevention of diarrhea cases.

A year later, a survey was conducted on the knowledge and behavior of under-five caretakers from the same six sites as a means of evaluating the impact of the PHAST program which had been undertaken. It was noted that a vast improvement had occurred in the choice of safer drinking water sources, chlorinating and use of proper containers. The choice of hand washing with soap had increased but little improvement was noticed in latrine usage or garbage collection (Sasaki *et al*, 2006).

Unfortunately, though PHAST programs are believed to equip an EHO in investigative, analytical, monitoring and evaluating skills (Makweyane & Dau, 2001), the training coverage of these programs in terms of EHOs and community members has only been over a few selected sites in Lusaka as noted in the study by Sasaki *et al* (2006).

While there is evidence of an effort to implement PHAST methodologies and construct into government training policy (by locating a suitable training facility that needed rehabilitation (MoH, 2004:60), the program for some unclear reasons was not fully taken up. Unfortunately, there was no mention of any new plans in the subsequent strategic plans by Ministry of Health to mainstream this methodology in the EHO training institutions either. It, therefore seemingly, remains recognized as 'essential' yet relegated as an in-service training "option" for each district to take up at its cost. The dilemma is that while provision has been made for individual districts to determine their own in-service training priorities and to fund them from their annual grants, these tend to clash with the Ministry of Health's initiated training activities which are usually not discussed in advance with the targeted districts. The result has been uncoordinated training interventions, unplanned absence of service delivery by the officers involved (MoH, 2004) and noticeably the absence of PHAST training programs.

2.5. Other challenges of an EHO

2.5.1. Inadequate Numbers

Apart from lack of role clarity and inappropriate training, there are other factors which have been known to challenge the overall impact of EHOs in the community such as insufficient numbers to cover the targeted areas as demonstrated in Phastwana-Mafuya's study (2006) on the determination of health aspects of sanitation in rural communities in Eastern Cape. The researcher noted that 98.3% of the areas that had poor health lacked EHOs. In Zambia, the ratios of EHOs serving to a given population are below the WHO requirement of 1:10,000. According to Ministry of Health it has increased to 1: 214,393 (MoH, 2006). The need for trained EHOs therefore is great and the implications of their absence grave.

2.5.2. Wrong role perception and value.

But even where adequate numbers of EHOs exist and appropriate skills prevail, the ability to explicitly perform the environmental role in a community may be hindered by wrong opinions that the EHOs could have of their task with regard to what they believe the community's perception of their role is. It has been noted in some cases that the value placed on the office of care-givers as opposed to officers related to sanitary work has inevitably led to less environmental tasks being taken up. For example in the case of a program conducted at a refugee camp in Zambia (Phiri, 2001), health promotion workers, cadres very closely related to EHOs, were reluctant to do their hygiene promotion activities which were perceived to be of lesser importance by both themselves and the community in comparison to care-givers, who are perceived to be of a more "respected" office. Should this be the case with the environmental officers in Lusaka, then the peri-urban communities could be enduring environmental health distress as such areas are sometimes not regarded as a priority for health promotion programs (Manase *et al*, 2001).

Chapter Three: Methodology

3.0. Study Design

This is a descriptive study which aims to gain insight into the preparedness of EHOs for their role in Cholera prevention and management, investigating particularly their own perspective. Literature reviewed (such as Secker *et al*, 1995 and Gilford, undated) suggests that such a study which aims to explore and interpret the perceptions and understanding of an issue of key informants and participants (EHOs in this case) is best addressed by a qualitative research methodology utilizing interpretative tools instead of statistical quantitative methods. While quantitative methods may offer advantageous information such as percentages of good or bad performance in cholera control, they will not expose the causative factors of the trend. In contrast, in-depth interviews and Focus Group Discussions (FGDs) provide a basis for extracting a more holistic context of the issue under investigation (Gilford, undated). For that reason, this study will attempt the first two stages of an action oriented research as out lined by Grbirc (1999) by attempting to identify and explore factors related to an issue of concern, in this case cholera outbreaks, from some of the parties concerned (the EHOs). The usual follow-up stages characterized by analyzing resolutions and finally implementing them, will require another study.

This study utilized unstructured interviews and focus group discussions with EHOs, their supervisors and trainers to reveal their perceptions about how well EHOs were prepared to manage cholera in their unique social context. Interviews and focus group discussions with different actors availed “multiple versions of the same realities” (Secker *et al* 1995) which deepened the study.

3.1. Study Population, size and sampling procedure

The study population consisted of the EHOs under LUDHMT. The office of the Environmental Health Expert as supervisor to the EHOs was called upon to assist in identifying the cholera prone areas where information rich participants were to be selected from. However, this task evolved into determining who should attend the focus

group discussions as well. The supervisor advised that only those who had been exposed to the cholera prone zones should participate. The consequence was a reduction in the researchers anticipated number of twenty-seven (27) EHOs dwindled to twenty two (22) altogether. Therefore instead of conducting four focus group discussions, only three were accomplished with a total of 18 EHOs in attendance of the FGDs altogether. A further five (5) of EHOs participated individually by assisting the researcher in further clarifications on the topic of discussion through phone calls or face to face conversations although they had not attended the FGDs but qualified as having been exposed to the cholera prone areas, but had been assigned to other stations.

The selected EHOs were expected to provide rich in-depth information on their experiences in the field in terms of their skills and training. To attain maximum variation the study sample comprised of EHOs currently working in cholera prone areas as well as those that had left for less prone cholera zones. This aspect of purposeful selection of study sample is a key feature of qualitative research (Rice and Ezzy, 1999) where participants are drawn from the specific target group so as to give an in-depth account to the issue being discussed.

Although this number is small it is consistent with qualitative research where smaller numbers are utilized to gain more detailed thick descriptions than one would with a larger figure. Furthermore qualitative research methodology does not require the study of all individuals in a study population to ensure quality attainment (Katezenellenbogen *et al*, 1997) as this can be gleaned even from a subsection of the sample.

The EHOs were contacted and asked to participate by their supervisor in person or over the phone. The division of the EHOs into different groups offered clarification of certain points raised by the other whilst consolidating findings of each group on whether the cholera incidence was due to lack of support and/or training, or other factors.

It was discovered during the process that apart from the EHE, two other EHOs at the office termed assistants to the EHE acted as supervisors to the EHOs in the district. Therefore these were also included in the study as supervisors and interviewed using the same guideline for the EHE and all three assigned the term 'supervisor' 1, 2 and 3. This input was quite valuable, especially given that the office of EHE is included in the public health policy makers at the national level.

The other key informants were two lecturers. One from each of the EHO's training institutions who availed detailed information on the type of training their institutions offered in the area of water and food borne diseases with special emphasis on cholera. They also served as a means of validating the data from the EHOs about their training facilities and curricula. A copy of the curriculum from one of the colleges was obtained to enhance credibility of data.

3.1.1. Participant profile

The participants in the study were drawn from the health centers that had registered cholera cases in the recent past or at least the EHO had previously worked at one. In total the participants were more women than men and mostly young people between 25 – 35 years of age. Only a few seemed above forty years in age and from their contributions to the discussions, one could tell that they had greater experience in the field. All participants were graduates from either Evelyn Hone College or Chainama Hills College of Health Sciences, the two institutions responsible for the training of the EHOs in the country. Although there was ample encouragement for the participants to air out their views, a certain reserve was observed in the rather short answers to the subject especially in the beginning of the meetings which cleared as the discussions went on.

The lecturers interviewed also came from the above colleges. One of the lecturers' specialties was Primary Health Care and that helped enrich the input received. The supervisors were products of either of the two colleges. Although they mentioned that they had areas of specialty at the LUDHMT office (that is, Infrastructure, Malaria Control and Epidemics) they were practically involved in each others sphere which enabled them to offer insights in the area of cholera epidemics/outbreaks. In contrast to other participants they tended to want to give documents to substantiate their input.

The discussions did not dwell on the differences in the syllabus of the two institutions, although the topic was raised occasionally, but rather on the impact of the training received on the EHO in preparation for the work in the field. Quite a number of categories came up from the discussions. These were fixed under three major themes which were classified as roles, type of training and skills and support.

3.2. Data Collection

Data collection was done through focus groups discussions and some follow up phone calls for clarification on certain points from the EHOs. Semi-structured face-to-face interviews were utilized for their supervisors and trainers (appendix 3).

After obtaining permission from the Director of LUDHMT and EHE, the EHOs were contacted and asked to attend a focus group discussion by the EHE their supervisor. They were divided into groups of six, which is a recommended number for such discussions. Dates were arranged for each group to attend and a venue identified in the center of town so that the participants could easily get back home after the discussions. Unfortunately discussions could only take place after working hours (17:00hrs) due to other prior programs in the community taking precedence such as chlorine distribution and Malaria Control household spraying. Although the re-funding of transport fares was offered attendance was compromised by the late meeting time in the day and absenteeism by some participants which resulted in rescheduling and reduced the numbers further.

3.3. Focus Groups Discussions

A focus group discussion comprises of selected individuals who confer over a given research subject to which they have shared similar experiences. It is best used to scrutinize the participants' knowledge and experience dynamics in their unique cultural setting. It can be used as a means of triangulation in certain studies, as is in this case, and is chosen over individual interviews for the specific reasons indicated below.

One of the reasons of employing a FGD as opposed to many individual interviews was the hope that such a group setting would be enable EHOs to self evaluate and clarify their understanding of the issue by querying each other and at the same time offer greater insight to the researcher of the dynamics involved in their occupation or training. This is one of the FGDs advantages over individual interviews that Gibbs (1997) and Kitzinger (1995) allude to. Furthermore, the researcher through such FGD interactions could identify which areas were of priority for the EHOs or where emphasis was placed as they gave their opinions of their environment, beliefs and values. All this was attained in a shorter period than would have been possible with individual interviews of the same number of participants.

Gibbs (1997) also recognized that FGDs have a tendency of easily revealing the prevailing gap between what is known in theory and the practice in reality as participants challenge each other on what they believe and what they actually do. This aspect could shed greater light on why some areas have no cholera outbreaks and others have more. It may also indicate what the EHOs learnt at college and their level of preparedness to prevent cholera outbreaks. One of the anticipated outcomes normally associated with FGDs is the sense of empowerment that the participants should feel by being recognized as an entity worth working with and worth involving in identifying solutions to a public dilemma.

In this study, the researcher acted as moderator of the FGDs and had them recorded. She also made notes of important points which formed the basis of formulating new questions for the subsequent FGD where she sought clarification or endorsement of given points. She also expressed sensitivity to the fact that group discussions tend to mask minority views especially if contentious. She included such contributions as part of the data even when in disagreement with the overall emerging theme.

A colleague to the researcher was requested to take notes of the salient points which were read back to the group as a means of “member checking” verifying as correct the reflections of the discussion.

3.4. Interviews

Using a different approach of obtaining insights into this study, interviews with the supervisors were conducted. It was expected that the supervisors would shed light on what was expected of the EHO compared to what was actually done and what was looked for in employing one for such a task. It was also interesting to find out what policies if any are prevailing in promoting the effectiveness of an EHO.

Interviews with lecturers from two chosen Zambian EHO colleges were done. The lecturers were supposed to highlight the training EHOs had in relation to waterborne and food borne diseases and how the training was done. For example, what did they offer as a college to embrace the current role requirements of an EHO in terms of skills? For these interviews, semi-structured questions (appendix 3) were utilized, and the answers hand written which were later typed using word processor for easier reference and coding

during analysis. Follow-up telephonic interviews became necessary to clarify and consolidate data.

The data collected was transcribed and transferred to a PC for ease in color coding and sorting out into categories of emerging themes or patterns, a method also suggested by Gilford (undated). A record of any reflections the researcher had during the process of the study or analytical notes was also included in form of a diary. This was to ensure an audit trail of changes to the investigation process was readily available.

3.5. Data Analysis

Data analysis commenced during data collection as analytical notes were made by the researcher during that process. For example, I sought clarifications or answers to questions arising from a previous FGD in the next or through telephone conversations.

The data was scrutinized using the analytical framework suggested by Pope, Ziebland and Mays (2000) and Gilford (undated). As researcher I acquainted myself with the data collected, allotting time to identify similar stories of experience or themes, different perspectives used by participants in reference to the same things and ideas. These were used to determine the key issues, concepts or themes which arose with reference to the questions raised within the scope of the study.

These were then sorted into particular units or categories which were be coded appropriately. For example those that pertained to training were coded as ‘training’.

The categories were arranged into patterns that connected themes with the meanings or reasons as expressed within the data to enable interpretation of the findings. Unexpected negative theories were examined to strengthen the findings and were adopted anyway to add reliability of the data collected.

3.6. Validity

Creswell and Miller in their article ‘Determination of Validity in Qualitative Inquiry’ define validity as “...how accurately the account represents participants’ realities of the social phenomena and is credible to them...” (Creswell and Miller, 2000:124). They assert that validity refers to the credibility of inferences made to data in qualitative research. Taking this into consideration, the goal of the data analysis of this study was to

ensure that the findings of the study would accurately represent the EHOs' realities of their role and abilities to manage cholera. To achieve this, two viewpoints, as tabulated by Creswell and Miller (2000) will be employed, those of the researcher and the participants.

As a researcher, I opted when to end data collection though saturation had not yet been fully attained because of the short period of time that was devoted to the task. However, I used triangulation by involving different actors (EHO's, lecturers, and supervisors) and various methods of sourcing of data (interviews, FGDs) to give the research more credence. The assumption was that a uniting thread in this collected data will emerge and give meaning to the findings as well as offer confidence to the study.

Secondly, my opinions or assumptions during the study have been availed through the inclusions of my reflections in the results and thereby maintaining accountability. To confirm this, a record of the process of data collection and feelings was kept for reference.

The participant's viewpoint was taken into account through the involvement of the EHOs by ensuring credibility of the data or inferences made to it. This was done by cross checking the notes made during FGDs and the interviews with the participants to confirm that the raw data did indeed reflect on their input.

3.7. Ethics

In order to ensure that ethical values are upheld, clearance was sought and obtained from the Faculty Board Research and Ethics Committee of the University of the Western Cape. Letters from the University were taken to Director of the Lusaka Urban District Health Management Team and the District Environmental Health Expert to explain the objectives of the study and also get consent. The participants in the study were given an information sheet as well which explained the intentions of the study. Consent was sought and obtained through the signing of consent forms. It was clarified that it is on voluntary basis, with no monetary gain but that their contribution will be the greater benefit of public health. It was also made clear that their responses during focus discussions or interviews would be treated with utmost confidentiality and under lock and key. The data instruments would not bear any means of identification traceable to the

individual's names and that should there be need to refer to a particular individual input then further permission would be sought from that individual.

3.8. Limitations

The time frame and timing of data collection of this mini-thesis made it difficult to involve all the EHOs in Lusaka and thereby broaden the input from those affected. Unfortunately, it coincided with Malaria control programs as well as chlorine distribution being done by the same participants. The composition of the sample was inevitably determined by the office (EHE) which officially invited the EHOs to participate in this study. However it is supposed that enough insight to identify the challenges of cholera control being encountered by the EHOs has been gained.



Chapter Four: RESULTS

4.1. Environmental Health Policy

Zambia's Environmental Health Policy (MoH, 2005) contains most of the governing principles on the current role of an EHO. It also gives a backdrop to the challenges the EHO has to face in the role of preventing diseases such as cholera which is encompassed in the phrases such as 'epidemic prevention'.

The policy briefly positions the areas of responsibility for an EHO regarding aspects of human health which include water supply, sanitation and hygiene practices, excreta disposal, liquid and solid waste disposal and environmental health disease control among others. It points out the enabled interventions as of now which include improving water supply and sanitation systems, development of water supply monitoring and surveillance, training programs in community participation and health education.

But within the same policy are statements suggesting that there has been failure of these interventions on public health in general due to lack of resources, institutional capacity especially at district level, and ineffective coordination of stake holders and lack of enforcement of existing environmental health laws. Specifically, it mentions that financing of Environmental health interventions at community level has been a major problem as it has been restricted to pilot projects under what was termed the Community Innovation Funds, implying that after that initial surge of funds towards a given project, usually nothing remains to work with unless the community had prioritized and implemented a self sustaining mechanism in the initial stage of the innovation. It is against this background that EHOs have to work in their respective zones to promote health and especially prevent cholera in the peri-urban areas. Nevertheless, more should be gleaned from an understanding of the work environment of an average EHO.

4.2. The Setting of an EHO's workplace.

Most Health centers/clinics have a registered Mid-wife as the one in-charge of the center. Others may have a clinical officer and visiting doctors who may or not be on a semi-permanent position. The EHO works as a team member of a group composed of those in charge of the out patients department, transport, procurement and any other section of the center. All these officers report to the "In- charge" at the center. The Community Health

Workers (CHW's) or representatives from the Neighborhood Health Committees often report to the EHO and with the key health center officers form an Epidemic Preparedness Committee which in turn reports to the equivalent at district level. The EHO has a greater role of not only attending to the members of the community as they come to the clinic when required (for instance in chlorine distribution) but has to go out of station to visit them within the area to ensure all aspects of public health are upheld. Even though EHOs are based at clinics they are required to report to the EHE at their district office who is often an EHO by profession.

4.3. The Role

4.3.1. EHOs perspective

During the FGDs, participants were asked to describe their role in the community, with reference to the last cholera outbreak, letting out what they believed was the cause and what they had done in order to avoid it recurring. Firstly, their responses revealed that EHOs believed the cause of cholera in peri-urban Lusaka to have been a complexity of issues which involved poor personal hygiene, poor water quality and the ongoing use of shallow wells in the unplanned settlements (peri-urban areas, also called shanty compounds). In essence, their response seemed to demonstrate a bias towards holding the community members to blame for most of the factors related to the cholera crisis as the quotes below, show.

“Water contamination; especially in areas where shallow wells are an option for drinking water” EHO.

“It's all the mushrooming of unplanned settlements which of course have no planned water and sanitation systems” EHO.

With regard towards their responsibility, the EHOs admitted that they did have a role to play in preventing cholera especially through monitoring of the water sources, a task which they considered as a critical preventive strategy against cholera. Their key activities revolved around improving water safety and water supply coverage by introducing tap water sources where (at a small fee for a twenty-liter container) members

of the community could access safe drinking water. These water sources or water kiosks were said to be manned by a member of the Neighborhood Health Committee whose role was to lock and open the tap at given times of the day. These sources were monitored regularly by the Community Health Workers (CHW) who report to the EHO. The task of checking the quality of these water sources is part of the EHO's routine, done through sampling and sending the water for analysis at the public health laboratory. It came to light during the FGDs that following the last outbreaks, some EHOs in the district, had received simple water testing field kits to increase coverage of water analysis in the field as one mode of preventing recurrence of cholera. Their analysis results though had to be confirmed by the public health laboratory in the district, but at the time of the FGDs, a number of EHOs had run out of these test kits and the majority of the participants had not attended the prior training that went with the receipt of the water testing kits.

Other activities which EHOs listed as their means of preventing cholera outbreaks were:-

“...contact tracing and training the community in PHAST activities.” EHO

“...promoting the proper use of pit latrines and solid waste management.” EHO

“... promoting good hygiene practices and monitoring water sources.” EHO

Contact tracing was done whenever a suspected diarrhea case was identified at the clinic/health center and followed by visitations of the patient's home where necessary remedial and preventive action was taken such as chlorination of water source and educating the household in hygiene. Promotion of the proper use of the latrines focused on the use of soap in/and the washing of hands after visiting the latrine. In summary, the EHOs portrayed their role as primarily preventive in nature.

“Ours is a preventive career” EHO

“We are involved in the preventive and curative cycle of health delivery” EHO

“I am involved in prevention and control of communicable diseases” EHO

“We are mostly on the preventive part and we do everything possible to avoid an outbreak...but we are left with no option when it starts. We just have to avoid the spread.” EHO

Upon further discussion, the EHOs revealed that their yearly activities were informally compartmentalized into those done before an outbreak as to prevent the onset of cholera and the activities done during an outbreak to avert the spread of the disease. All such activities were categorized as 'preventive' measures and were characterized by health education campaigns or home visits which only intensified during an outbreak to contain the spread of cholera. However more was done in the community apart from the campaigns as the participating EHOs revealed.

"We take water samples to the laboratory." EHO

"We go door to door asking what they know about cholera and prevention." EHO

"At door to door we distribute fliers and ask people what they know about cholera..." EHO

"We continue with door to door campaigns ...promoting good hygiene practices even solid waste management." EHO

"Sometimes the campaign is a drama...at the GM point; about how to wash hands and things like that." EHO

"Liming of the pits (pit latrines); we still do liming..." EHO

Occasionally, an EHO is called upon by the 'In-charge' to attend to queries at the health center from community members regarding environmental health and to also educate the CHWs in participatory development methods such as PHAST which provides tools for members of the community to initiate solutions to their own problems. Unfortunately it seemed that few of those in the FGDs had actually received PHAST training probably due to the limited years of service. An EHO is also required both by the 'In-charge' at the center and the supervisor (EHE) at the district office, to give guidance to the Neighborhood Health Associations in environmental issues and attend the Epidemic Preparedness Committee meetings based at the health center and the overall meetings at the District office.

4.3.2. Lecturers view

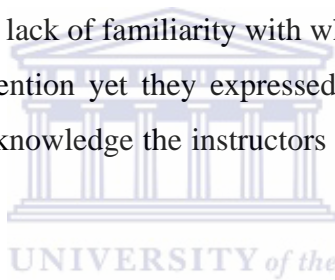
In comparison to the EHOs the lecturers were briefer in describing what they perceived the role of an EHO in the cholera prevention was. They tended to use engulfing terms such as ‘diarrhea diseases’ or ‘communicable diseases’ instead of specifying the disease in isolation as ‘cholera’. Consequently their responses concerning the roles of EHOs in cholera prevention were often more generalized rather than specific. For example their perception of the role of an EHO in cholera prevention was described as:-

“... a cadre in the community with wide training in tackling health problems”

Lecturer A

“... a health promoter.” Lecturer B

There was also an indication of lack of familiarity with what the current practice of EHOs was in line with cholera prevention yet they expressed confidence that their trainee’s knew what to do based on the knowledge the instructors had imparted but that they were utilizing little of it.



“I don’t really know what EHOs are doing but I know what we train them to do, we train them to be promoters and protectors of health. They (EHOs) know about causative agents and disease control.” Lecturer B.

This response posed a sense of detachment on the part of some lecturers from the daily routine of an EHO in employ and consequently perhaps impacted their perception of what determined the skills in the field for the EHO trainee. However one lecturer who had been trained as an EHO seemed to offer more from past experience with what was currently expected of an EHO upon completion of the training.

“I expect the EHO to be a trained sanitary officer, able to inspect and supervise building construction.” Lecturer C

“What kind of buildings?” Interviewer

“V.I.P latrines for instance... Even drainage facilities. When I was in college we were involved in building such things. We constructed some of those buildings you see at X college.”

“So do you think they do that now?” Interviewer.

“I think they lack tools. You see, we would have these tools here (at college) but where they go to work, they have no tools to use.” Lecturer C

It seemed from the lecturers' point of view that more could be done by EHOs in the field especially when referring to subjects that received greater emphasis during training such as environmental surveillance.

“They should be carrying out environmental checks. Like water supply and sanitation.” Lecturer B

“There must be food and water control to prevent diseases like cholera. Proper health education is vital.” Lecturer A

4.3.3. Supervisors' views and expectations

In contrast to the lecturers, supervisors gave a more explicit description of what they expected of EHOs in their respective communities. Whilst referring to a copy of the 'job description' (a form listing the activities that defined the role of the EHOs at the health center and in their respective zones) the supervisors tabulated their requirements of an EHO in the current scenario.

They stated that EHOs at health centers are expected to spearhead the implementation of all environmental health activities at a health centre and in the community. They are therefore expected to conduct hygiene and health education as well as to come up with a diagnosis of the community's health. They are to promote the safety and quality of water and food in the community. Through surveys, they are to determine the percentages of households with access to drinking water, safe disposal of excreta and other liquid wastes. EHO's are expected to persist in enforcing public health laws by maintaining a register of inspected public premises and promoting housing standards. More importantly they are to ensure the epidemic preparedness of the health centre and community. Each EHO has to be prepared to sensitize the community and engage them in PHAST

methodology oriented projects. Lastly they have to deliver all this information in a monthly, quarterly and annual report which is submitted to the In-charge and to the EHE at the district office.

As far as the supervisors are concerned the list tabulated their expectations of an EHO. They also felt that it was ably tailored to meet the type of public health work needed in the community with the inclusion of cholera prevention measures. They admitted that it did not cover every detail of what an EHO is involved in such as Malaria control activities and liming of pit latrines and that they believed the notion that the EHOs were managing to cope with what was expected of them regarding that job description list.

4.3.4. The influence of donor funding

The activities given in the job description list would suggest that the typical traditional police-inspector-hat has been replaced by that of a community developer but though this may be the case in theory, it was noted that this list had only few of the responsibilities that were directly related to prevention measures and only one directly linked to epidemic control. Yet it was epidemic preparedness or control which received the bulk of the activities mentioned by the EHOs during the FGDs although it focused on the aspect of cholera outbreak preparedness (It was also noted that the EHOs tended to use the term 'epidemic preparedness' to mean 'cholera preparedness'). This could probably be a result of the surge of donor supported activities (such as cholera awareness campaigns during the outbreak and chlorine distribution with help from NGO's) getting more attention than those that do not and those that had the support coming to an end when the funds were frozen. An example is the case of the liming of pit latrines exercise mentioned during interviews. According to one of the supervisor's, the exercise had been halted because a major project donor working in conjunction with government had stopped paying stipends to those who were involved in the liming having considered it as part of the health workers routine work by then.

As a result there exists some disparity between EHO's responsibilities as described by the EH policy, the job description list as given by the supervisors and what is obtained on the ground pertaining to the actual role in the community of an EHO. The EHO's tended to be involved more in what received greater funding and in this case it seemed to be the

control measures of cholera and not preventive ones such as water quality monitoring and sanitary surveillance.

4.4. Current activities defining the role

Although one of the EHOs in a follow-up interview gave the impression that there was hardly any prevention activities being done in the district, despite the courses received in college regarding the same, the majority of the participants pointed out five main activities which they felt indicated their active role in cholera prevention.

Unfortunately we were unable to observe the EHOs at work which would have assisted in consolidating their perceived role and the expectation of their supervisors. However, we were given a view of the desired goal and related activities which we constructed into the list below:-

1. Water Quality monitoring
2. Household chlorination
3. Burying of shallow wells
4. Inspection and liming of pit latrines
5. Health education



4.4.1. Water quality monitoring

While this is a necessity in cholera prevention as expressed by all participants, the EHOs and supervisors felt that very little was done due to a lack of resources, mainly transport. This adversely affected the number of samples taken which was ultimately less than required to yield scientifically reliable results. It is said that the benefits of a water monitoring exercise are only seen when sampling is done repeatedly and consistently of the same source (Franson, 1998). The EHOs said they took an average of 3 samples of water per quarter in compliance to the stated minimum requirement by the district office and were responsible for giving a report on the water analysis results. The frequency of sampling was a source of concern not only to the EHOs but to the supervisors who felt that though they expected the EHOs to bring in that specific number of samples it was not ideal and they tried to improve the situation but failed.

“They (EHOs) are supposed to collect three samples a quarter...ah... that means a sample in one month!” Supervisor 1

“We tried once to put a Rota but it did not work.” Supervisor 2

The EHOs expressed confidence in their ability to monitor in water quality based on the theory attained at college as well as the experience in the field howbeit small. It was in this area that the supervisors expected the EHOs to be conversant with the right dosage of chlorine to use for water sources and also other disinfection purposes where applicable. They also gave the EHOs liberty to take appropriate action where it was necessary.

“If there is a problem, I give the report to the owner (of the water source) and send a copy to the district. Then I give them chlorine.” EHO.



4.4.2. Household Chlorination

Chlorine distribution is one of the activities associated with the EHOs role in the community. The EHO is expected by the in-charge at the clinic and supervisor to instruct the recipients on chlorine dosage, and the kind of containers appropriate for such a task. However, the distribution is limited to one bottle of chlorine per household despite how large so as to limit inappropriate usage.

“The chlorine is distributed at GM points and during door to door. Each family is given only one bottle. If we give them more, they will sell it.”

Supervisor

Chlorine was also said to be distributed to carers of under-five children who had shown symptoms of diarrhea and had visited the clinic. The use of chlorine at house hold level has been found through research to be effective in reducing diarrhea cases from 6-90% (Sobsey, 1989). However it is often compromised by the type of container, the dosage of chlorine and the contact time. It was not clear from the FGDs whether the study district had been taught about the type of container to use and or how the dosage was affected by

limiting the number of the distributed chlorine bottles to one, regardless of family size. It was at this juncture however that suspicion of these chosen methods of preventing cholera emerged in the FGDs. As expressed by one EHO:-

“There should be more training and workshops to carry out research to determine the efficacy of some of these measures already taking place.”
Young EHO.

4.4.3. Burying of shallow wells

Piped water is not a common feature in the peri-urban settlements. In George compound, one of the largest peri-urban settlements in Lusaka, the use of shallow wells was widespread. Unfortunately the consequence was that it was linked to every other outbreak in the city. It made sense that the first intervention by Japanese International Cooperation Agency (JICA) of placing a water facility began there (JICA 2005). But some people still used shallow wells because they were within reach compared to the commercialized taps and consequently rendering the impact of the JICA's efforts minimal. Consequently, Ministry of Health in conjunction with Ministry of Local Government and Housing resolved to bury the shallow wells to reduce the incidence of cholera. The compensatory plan was to increase water points by introducing water kiosks and bowsers as alternatives (NWASCO, 2004).

EHOs in the community added to their role the supervision of the burying of shallow wells. This was followed by the additional task of ensuring proper maintenance of the new water points which had been installed by commercial water service providers. Although the EHOs felt their input was not considered by the initiation of this project they did attest that ever since the exercise started in George, the cholera cases had dropped, a view that was confirmed by one of the supervisors.

4.4.4. Liming of pit latrines

The EHOs in this study included the liming of pit latrines as one of their recently added duties in cholera prevention. Supervision of this exercise fell on the EHOs since this was a sanitary operation and the liming process included members of the community, who

would be given a small stipend for their work. Unfortunately this activity was not streamlined into the routine work of EHOs that is government supported and the community such that it stalled when the donors pulled out.

“No. we have not started liming yet...they (the donor) have stopped paying the workers for that. So the lime is there but we are not doing that yet...” Supervisor

Liming of pit latrine works on the principle of raising the Ph to above 12 in the sludge and thereby killing off the bacteria and removing the smell (Science, undated). Like most measures, this was adopted as a technique from the developed worlds' mode of treating sewerage which is done on known volumes with the appropriate dosage, just like chlorination. But the challenge in treating of pit latrines is that the sewer volume is unknown, an assumption is made on dosage and according to the EHO supervisors, lime was only applied once a month. The exercise of liming the pit latrines was done just before the onset of the rain season and this was done to latrines which were still in use. This meant that after a while the lime dosage would be ineffective and since most pit latrines are not covered the onset of rains would lessen the effect even further. At the time of this study's data collection no investigation had been done to determine the efficacy of this exercise but it was one of the measures of cholera prevention that both EHO's and one of the supervisor's felt should proven as to whether it was effective.

4.4.5. Health Education

Another EHO role which received accolade from all participants as a form of cholera prevention is that of promoting health awareness through health education. Prior to the onset of rains and the predictable cholera cases, the media is full of health messages promoting proper hygiene and using safe clean water. In the peri-urban community, the messages are supplemented by visits from EHOs and CHWs with health education campaigns as well as fliers and posters mainly targeted at schools and bars. Efforts are made to ensure the illiterate can learn something from pictorial messages and also in local languages for easier understanding

The messages on the fliers are focused on hand washing and ways of household chlorination, proper pit latrine use and food hygiene. Some of the fliers were in a local language or just pictures conveying a sanitary message. Yet the EHOs faced a challenge when they would find their fliers littering the streets after handing them to people in the streets. The supervisors said they had to change strategy after that which included permanent structures like schools.

“We leave fliers in the bars and schools. At least people there sit down and read. But if you just give to everybody you meet you will find the fliers all over the ground the next day.” Supervisor 3

4.5. Identifying cholera risk areas

From the discussion, it occurred that the cholera risk areas were often identified by the reporting of a suspicious case brought at the health center or after an outbreak. Rarely was it a result of noticing the rise in poor water quality or worsening sanitary conditions which would warrant immediate action. The picture portrayed was that searching for potential risks was not an issue that was often times proactively pursued by the EHOs and therefore confirmed our suspicions that some of these cholera ‘prevention’ strategies were more a reactive service than precautionary.

4.6. The confidence in ability to prevent an outbreak of cholera

When asked if they felt capable of preventing an outbreak, the participants were very quick to answer in the affirmative. However the reasons they gave for their positive response were centered on what they perceived as their adequacy in having all logistics in place in preparation for an outbreak and controlling it. When probed to think of themselves and the community achieving a state of ‘no incidence of cholera’ they exhibited a lack of confidence that it could be a possibility and gave reasons which included some kind of blaming both the community and other service providers such as the Lusaka city council who they felt were responsible for town planning and solid waste management.

“People are a problem. We teach them what they should do, they know what to do but they do not do it.” EHO

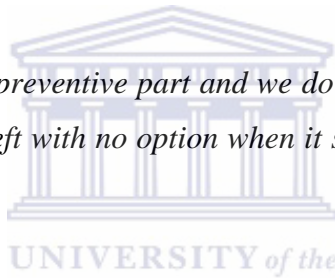
“There are no services here. We tell them not to throw garbage anyhow but no-one collects garbage.” EHO

“It is impossible, just a pipe dream. What is needed is drastic, like flattening those areas and building elsewhere.” Supervisor

“Even if they could dig a pit latrine, those houses are too close, there is no space. I don’t know what they use.” EHO

It was also emerging from the discussions that the EHOs were resigned to facing cholera each rainy season for this reason they directed their efforts to epidemic preparedness.

“We are mostly on the preventive part and we do everything possible to avoid an outbreak...but we are left with no option when it starts. We just have to avoid the spread.” EHO



Sad as it may be, it seemed that the supervisors held the same sentiments. They portrayed greater involvement and activity in the preparedness for the outbreaks while ensuring that every zone has adequate resources too.

The lecturers on the other hand did not appear to have taken notice of the existence of epidemic control preparedness. The impression received from the interviews was that they had little to do with what the EHOs were doing once they left college. Once more, this projected a lack of integration between lecturers and the EHOs work environment and its demands could be responsible for the gap between training and the skills EHOs currently need.

Some of the younger EHOs felt these gaps could be eased had they been equipped with the PHAST methodologies in college before graduating. This was due to the fact that PHAST methodologies tend to avail tools for both the EHO and the members of the community, which could be adapted to the local needs in terms of sustainable development. The supervisors also agreed that most of the incoming EHO needed to be

trained in this course but wished it was a course offered in college so that the EHOs would currently focus on training of the community instead of themselves. However, they appeared confident of the skills that most EHOs had in other areas such as teaching, sampling and inspections.

The lecturer's point of view on the skills attained by EHOs in college was that the trainee's had been equipped with what was desired to conduct inspections in areas of sanitation. Specifically mentioned were ventilated pit latrines, drainage systems and other buildings as required by the public health laws. They seemed to imply that EHOs are aware of what should be executed in the field as they had received the essential college training for those preferred skills.

“They have the skills; they are trained to carry out sanitary surveys, to supervise the work that should be done to improve this, especially in these areas.”

Lecturer C



4.7. The Training

4.7.1 Structure of Courses

The EHOs considered their training as being composed of lectures, practicals, project proposals, community and industrial attachments. A look at the curriculum indicated a year divided into three terms. One term of the last year is entirely devoted to industrial attachment. The students are supposed to complete theory and industrial or community attachments in three and a half years. Although not clearly reflected on their curriculum, some kind of attachment seemed to feature in each of the three years of college from the EHOs experience. Not all students went to health centers on attachment as some went to meat industries instead but it was clear that the health centers gave better footing to the few student EHOs who would be working there later as expressed by one EHO.

“I learnt proper sampling from a shallow well during my attachment at the health center” EHO (Meaning it was only when she was in the field that she learnt through a hands-on experience how water sampling was done).

It became clear during the FGDs that the term community attachment was being used loosely to cover being at a health center, at an industry such as meat industries and at an abattoir, port or rural areas. The emphasis of where the students should go differed between the two institutions. One has a compulsory “port attachment” where a whole class relocates to a port in the country. At this college the abattoir experience (often based in an urban setting) is obligatory too. But the other institution places greater emphasis on attachments to rural health centers which are medical oriented.

Further investigation revealed that all EHOs would be involved in the compulsory port health attachments but during the rest of their vacations at college, discretion was left to the student to choose where to go during vacations. Some would respond to the call for volunteers at health centers in the community under the supervision of EHOs whilst others would opt to go back to meat industries. Very few of those interviewed were attached to a health center within Lusaka and even though not admitted to, it can be assumed that most students preferred to go to an industry (meat or dairy industry) where some monetary allowance would be given instead of a health center or abattoirs. This signifies that the benefits of the health center attachments were therefore limited to the few that chose to go there.



“The urban attachments (meaning abattoirs), this is when we work! For free!...during the industrial attachment” EHO

4.7.2. EHOs View

What came as a surprise to me as researcher was the level of satisfaction expressed by some of the EHOs towards the content and study material given in their institutions of learning. They considered a number of academic courses as ample in providing what was needed to tackle cholera as explicated below.

“There are courses that deal with cholera like ‘Water and Sanitation’ or ‘Communicable diseases’ and ‘Epidemiology’.” EHO

“Health promotion and Primary Health Care dealt with cholera too.” EHO

Yet some differed with their friends and registered concern over a lack of emphasis on practicals in certain areas in which the skills were demanded for in the field.

“We learn all this statistics but when it comes to application, there was nothing”

EHO

“We would do the theory but when it came to analysis like data analysis, there were no practicals, you know, like sitting at the computer.” EHO

“For us, we learnt all the theory but only saw a ‘cholera bed’ when we started work.” EHO

“I think more cholera practicals would have helped” EHO

Still others among the EHOs felt they had received much instruction in areas which were not applicable in their field of employ.

“There were these lessons on public health law...like how to get summons and taking people to court, we don’t do that here.” EHO

UNIVERSITY of the

Furthermore, a number of EHOs expressed their frustration at not having been prepared to face the administrative challenges of working in an environment where “all around you are doctors and nurses”. When receiving courses in administration, it was assumed that they would receive ample support to champion environmental strategies but faced with curative oriented supervisors at the health centers, they faced difficulties convincing them of prioritizing environmental projects such as water monitoring.

“It is difficult to convince them to bring water samples to the laboratory. That part was not in college, I learnt it now.” (Young EHO)

By this statement the EHO was implying that prior exposure during training to this aspect of conflicting roles and the lack of support from his/her superior, could have better equipped him/her to deal with the situation. However, this type of problem goes as far as the central office in Ministry of Health. In the National Health strategic plans 2001-2005

(MoH, 2004:61) one of constraints listed under the Environmental Health section was that this discipline had not been incorporated into the planning and operational structures of the central Board of Health resulting in curative aspects getting better attention.

4.7.3. Lecturers opinion

The lecturers interviewed gave the impression that they also saw a lack in extensive practical exposure given to the students which could affect their skills in the field but seemed certain that whatever little that had been imparted during training could help avert cholera. Their concern tilted more to the pressure they felt to impart these skills in terms of manpower and support from their superiors.

“They are very few lecturers and even less study materials.” Lecturer A

“I have to take all these courses you see here. We need more people.” Lecturer A

“You have to be very innovative in every way even where to take the students for practicals” Lecturer B

However one of the lecturers who also felt that the EHOs had adequate practical training during the college years to handle the challenges they face in their employ suggested that the problem lay elsewhere, namely in unavailability of the implements of the trade.

“I think they lack tools. You see, we would have these tools here (at college) but where they go to work, they have no tools to use.” lecturer C

Further more, it was implied that one of the institutions did not utilize problem solving techniques in training as one of the two lecturers represented, did not recall any problem solving infused in the institution’s curriculum. The details of the course delivery seemed to be left to the lecturers’ discretion more often than not. He expressed that most of his colleagues had to be proactive in structuring their teaching methods to include field trips and appropriate industrial training for the students which the institution did not seem to be particular about. Therefore the training could be different for different students, thus also affecting the skills attained.

4.7.4. PHAST

PHAST methodologies are tools used in the mobilization of communities in their own environmental development schemes and one of the requirements by the LUDHMT is that an EHO educates the community in these methodologies. However this has not been taught in college but as an in-service course during one project which was held within Lusaka (Sasaki *et al*, 2006). Even though the EHOs recognized PHAST as an essential part of monitoring and evaluating community development and even a step up in cholera interventions, few had received training in this area. Therefore the impact of such programs as mentioned by Sasaki *et al* (2006) was only experienced by few of the currently employed EHOs in Lusaka. This is sad because it was through such training that the members of the chosen community sites were able to construct their own Ventilated Improved Pit Latrines and create drainage systems which are necessary in the prevention measures of diarrhea diseases. Furthermore the residents acquired the skills which they could still utilize to teach others to construct on their own or be self employed. These were some of the participants' comments:-

"If we learnt more of this we would be able to assist the community to stop cholera and other communicable diseases." EHO

"PHAST helps us to analyze the gaps in cholera prevention and the way forward." Supervisor

"I wish they would have more skills in community development." Lecturer A

When queried over the content and orientation of the syllabus at college the EHOs, the supervisors and the lecturers seemed to have share common ground in wanting more hands-on experience incorporated in the training or at the least to ensure that an in-service training providing such an experience was available to all to give applicable skills.

"We need more courses in epidemiology and community mobilization. May be as in-service also to remind us what we should be doing." EHO.

“To intensify on cholera related practical attachments.” EHO

“There should be more involvement in community based projects such as establishing of wells and proper toilets.” Lecturer A

“They should include PHAST methodology as part of college syllabus.” Supervisor

4.8. The Support

There seemed to be a resounding agreement on what was lacking in terms of support in doing their work effectively was mainly transport. The impact of this can only be appreciated in the light of the vastness of the area each EHO has to cover to attend to all the residents of the Zone. This is also complicated by poor road network and worsened by rains.

“We need transport to collect samples and contact tracing.” EHO

“Its difficult to share the same vehicle for sample collection then contact tracing.

At least the patients have the ambulances.” Supervisor

“Transport is a problem. You want to go and inspect, do contact tracing and there is no transport.”

“We tried once to put a Rota but it did not work.” Supervisor

But transport was not the only lack in the routine of an EHO. Some EHOs did refer to other means of support that were needed to improve ones knowledge in their field.

“I would like a computer connected to internet in my office. Generally we don’t read unless you are studying and want a promotion. It is easier to check the internet at your desk for five minutes to see the latest in technology at the WHO site instead of going to

a café (internet) where you are constrained to spend your money.” EHO

“I would like to go for further training.” EHO

More discouraging was the absence of funds to carry out certain planned programs or the sustainability of already existing ones and sometimes it was the attitude of the community towards projects that had already begun. Mobilizing people to continue with projects after the initiating donor had left proved to be a challenge in some cases this occurred even when the project would be a self sustaining one like farming.

“No. we have not started liming yet...they (the donor) have stopped paying the workers for that. So the lime is there but we are not doing that yet. It is supposed to be done at the beginning of the season and we could have done another one a month after ‘cause there is plenty of lime’.” Supervisor

“JICA built some fee paying toilets and hammer mills; they had also started some farming projects to help people but I think those (farming projects) died down.”

EHO

While the cause of the farming projects dying out could not be determined by the EHO in the area currently, it was surmised that it could probably be a result of lack of community based management being established before donors left.

It also came to light that very few efficacy investigations had been done in the past concerning the strategies employed in preventing cholera except in one instance:-

“Only JICA carried out a ‘Knowledge’ evaluation. Nobody else has done anything there.” Supervisor

This “Knowledge evaluation” was a sampling survey on knowledge and behavior change conducted by the same earlier mentioned Sasaki et al (2006) study, where comparison was made between a baseline survey done a year earlier and one after intervention, namely training in PHAST and health education. The result was a noticeable improvement in the choice of water sources but little had changed in the use of proper latrines and garbage disposal.

We felt obliged to ask if there were other such noble organizations as JICA in the community that assisted in the fight against cholera. It turned out that there were other organizations such as Churches Health Association of Zambia (CHAZ) whose role was quite diverse as they were involved in many community projects. Medicines sans frontiers was said to be more specific in providing doctors at the selected cholera treatment centers during outbreaks. UNICEF was declared to have been involved in various projects but the most memorable one in relation to cholera prevention was the training of EHOs in areas such as water analysis through the introduction of portable lab kits (as well as simple Hydrogen Sulphide kits) meant to increase water sampling and analysis coverage.

One could conclude then that the EHOs' major challenge is not necessarily in what must be done on a daily basis but in defining, on the whole, what their job in the community is. As of now, it would seem to be subject to constant change based on the dictates of their different supervisors or the availability of funds and other means of support such as recognizing the importance of preventive measures by superiors. The EHOs have recognized the measures of cholera prevention that they employ but register concern as to whether they are indeed effective. They have also recognized areas in which they need further support and training to render themselves more effective such as PHAST methodologies.

The next chapter will look at how these conflicting expectations of key players are influencing the role of an EHO. The type of training that could be beneficial based on the current innovations and where the expectations of the researcher differed from reality as to what affects the role of an EHO.

Chapter five: Discussion

The process of exploring of the role of EHOs and their skills in the prevention of cholera within the peri-urban areas of Lusaka district gives an account of the EHOs' challenge in facing conflicting demands from their superiors, uninformed expectations by other key role players and the discontent the EHOs have with the strategies they are expected to advance for the development of community health and specifically cholera prevention.

In this section we will try to understand what factors influence the characterization of the role of an EHO and what could assist in giving it clarity and therefore give opportunity for effective strategies towards the avoidance of diseases like cholera which are preventable.

The key issues that arose were the change in role from a traditional health inspector to community health developer, the need for new skills related to the new role and the need to tailor the courses to include more practical exposure to the current work in the community.



5.1. Conflicting Expectations

In an effort to discover the specific role of EHOs in the prevention of cholera in the peri-urban areas of Lusaka district, we became conscious of the fact that defining their role was not as obvious as initially assumed. Actually as the study progressed it seemed that the role definition was subject to the particular perspective and paradigm of the key role players in the field of Environmental health.

For instance, the MoH as illustrated, through the Environmental Health Policy (EHP), expects the environmental health workers to take up the task of enforcing public health laws through rigorous inspections of structures and industries for potential occupational hazards, rodents and vector control and finally to rally support from the community for programs it has initiated. Although it alludes in a general manner to the major areas of concern in cholera prevention such as water supply and sanitation, water supply monitoring and finally the training programs in community participation and health education, it does not clearly apportion the promotion of these strategies to the EHOs. The policy points to the Food and Drugs Act (2001) and the Public health Act (1930)

which is supposed to guide the current EHO and improve public health yet they do not even allude to peri urban conditions. These Acts have not been revised to focus on the current public health needs of the community and so can not ably guide the EHO's role in the community.

The supervisors, on the other hand, gave a somewhat different impression of their understanding of the EHO's role by departing from the limited scope of the EHP's portrayal of a law enforcement officer. It seemed that they only extracted the aspect dealing with inspection of public premises from the policy which they then integrated into their generated list of community development related tasks which they gave as a job description. From their perspective, an EHO is expected to take up the responsibility not only of an inspector but that of a health teacher, an advisor, a supervisor and a public health promoter whose emphasis is hygiene and more especially to 'ensure logistics for epidemic control' which in reality are another term for cholera control.

The EHO's responsibility as of now covers additional forms of water monitoring and improvement, since the peri -urban water sources include shallow wells, boreholes and water kiosks. Sanitation surveillance has also changed from pit latrines (which were associated with rural settings) to include the clearing of drainage systems and overseeing garbage disposal systems. The challenge to the EHOs that is associated with these transitions will be the balancing of the expectations of their supervisors and that of enforcing the sanitary and water quality standards to the commercial water service providers without appearing too intrusive of their business lest they impede workable relations needed for the good of the community. Similar challenges were faced by the EHOs in Ghana (Ayee and Crook, 2006) where the EHOs authority had been minimized by the interference of political leaders who were part owners to the private toilets in the community and could not be held accountable when they defaulted. Fortunately this is a matter that can be solved with constant dialogue between all the stakeholders and the enforcing officer of the public health laws, the EHO.

On the other hand, the trainers' expectation of an EHO's role in the community was based on the training they impart to the EHOs and not on what they knew of an EHO's current task or its challenges in the community. Unfortunately this is biased to the old traditional function that is portrayed by the Public Health Act and the Food and Drugs

Act which are which are referred to in training and regarded as guides to an EHO's authority in the enforcement of the laws of health. Consequently, the EHO has mainly been trained with the expectation of fulfilling this role. It also emerges from the study that trainers have the notion that EHOs have received ample instruction to do what they perceive their effort towards cholera prevention should be, which comes out as work in construction and inspection of water, sanitary and drainage systems. This could translate to mean that they are content with the current training they offer for what they perceive are the EHOs needs in the field. Actually as far as they are concerned, EHOs should find ease in tackling these underlying causes of cholera (water quality and sanitation) and they believe that the perpetuation of the disease is due to the lack of technical tools rather than lack of skills. It was interesting to note, though, that when the trainers were asked what they considered to be the role of an EHO, none of them portrayed the image of an EHO as that of a law enforcement officer. Instead they referred to them as 'health promoters', indicating that they had an idea of what their protégées should be doing even, although they had deficient knowledge of the challenges they face in fulfilling those roles and could not translate their ideas into educational practice. All these factors point to is the lack of connectedness between the trainers and the prevailing demands of the work environment of EHOs. It was this same factor that Kitagwa (2006) was trying to address in engaging both supervisors and trainers in the drawing up of training strategies that are appropriate in content and mode to the duties that are demanded of the EHO in the field.

5.2. The lack of connectedness and coordination among key players

As mentioned before, an EHO is supervised by an EHE at the district and whoever is in charge of the clinic or health center where the EHO is stationed. We got the impression that there was lack of correlation between these two influential players in the fight against cholera and therefore a lack of clarity of what the implementer, the EHO should be doing. From the discussions we gathered that the only meeting that brought the EHE representing the supervisor at district level and the In-charge at the health center (and sometimes the EHO would be in attendance) together was the Epidemic Preparedness Committee or the Rapid Response Committee for cholera where the focus was obviously containing the disease and much less on prevention. These committees were also

replicated at national level giving them a strong link and base for getting the necessary support. We were not informed of a similar committee for preventive measures. Neither was there a similar link with the lecturers who train the EHOs leaving a gap between the trainer with his trainees, the supervisors and the trained EHOs. The result is the lack of understanding of what is transpiring in each others domain which has led to EHOs being skilled in areas that are not applicable to their environment or them not utilizing what they have been trained for because of lack of recognition of their value by their superiors at the centers. This could be the major factor in the seeming lack of progress in the averting the outbreaks of cholera.

5.3. The tensions surrounding the EHO's role

It was the EHO's description of their role which was rather perplexing as they tended to drift from prevention aspects towards preparedness and control measures of cholera. The reasons for this tendency unfolded as the discussions progressed. Firstly they seemed reconciled to facing cholera every year when there was ample rainfall to overflow the drainage and pit latrine systems of the peri-urban settlements and this was an outlook shared by their supervisors. The result was that cholera control activities were given more attention and with great support coming from higher office and donors, preventive activities dwindled. This tended to discourage the EHOs further and perhaps put a vote of no confidence in achieving the eradication of cholera. Unfortunately this becomes a difficult cycle to break because it is compounded by the attitude of some EHOs who did not think their strategies worthwhile in a community they regard as incapable of changing in attitude or practice with regard to hygiene despite the knowledge imparted to them.

Another reason was one that is typical of professionals of one orientation being supervised by those with a different set of priorities as is with doctors or nurses supervising the EHOs in this study. This was exemplified by one EHO who found difficulty in convincing his superior at the health center to execute his disease prevention strategies. Prevention strategies were not considered a priority by medical staff, which is not surprising in a curative oriented set up. Unfortunately this creates an area of conflict since the EHE at the district would be requesting updates on preventive strategies such as

water quality monitoring whilst the In-Charge could be more interested in ensuring that logistics were in place for an 'impending' outbreak.

In addition, the EHOs did not exhibit conviction in their current measures of cholera prevention which they strongly wished could be researched for efficacy to provide them with a sense of their reliability and yet that did not deter them from continuing with the same strategies. The adoption of this position by the EHOs places them in the same predicament that researchers such as Laris (1992) have attributed to public sector workers, especially managers, who feel obliged to obey courses of action dictated by a central office even though they may consider them irrational.

Lastly, it looked as if aspects of epidemic preparedness were getting more attention due to the level of funding and support they received in terms of transport and other logistics. It became clear that the EHOs role can be influenced by which projects were funded in term of accomplishing a task as was the case in the pit latrine liming exercise which halted when the funds dried up. Though it was not the EHOs who were receiving the stipends but their community members, it was impossible for the EHOs to work without people to supervise. Unless such issues are addressed the status quo will prevail. In view of all these reasons, it became clear why the EHOs were more preoccupied with efforts towards cholera control than their role in its prevention.

Nevertheless, despite their lack of confidence and little financial support in some of their designated activities, the EHOs regarded themselves as essential cadres in promotion and prevention of disease which included cholera. This is a role which they feel is uniquely theirs in contrast to their medical counter parts at the health centers who are more curative oriented.

In detailing their preventive function in their zone, the EHOs regarded their tasks of monitoring water quality, carrying out sanitation surveys and delivering health education through door to door campaigns as steps towards curbing cholera. It is worth noting that most of the preventive measures such as household chlorination that are promoted by the EHOs, have actually been researched elsewhere and are supported by a number of researchers such as Sobsey (Sobsey, 1989) as means of preventing diarrhea diseases especially in the low income groups of society who can not readily afford piped water

and proper sanitary facilities. How effective the intervention has been in these cholera prone areas of Lusaka district, however, is yet to be fully determined.

What emerged from this study is that the EHOs' indicated knowledge of what their role should be in the community but had to work round different expectations from their supervisors (at the district and at the center. Their role defining activities were also to a large extent dependant on financial support from donors rather than government support.

5.4. Training and Skills

This study's participants gave reason to believe that the current curriculum at EHO institutions of learning was providing the needed skills in the areas of water and sanitation as far as inspections and the crucial steps required in enforcing public health laws. The lecturers further demonstrated themselves as being ardent about their trainees experiencing the workings of an abattoir and inspections of goods at ports of entry in the country. All these tend to emphasize the importance of the EHOs role as inspector and law enforcer. However, the current role of an EHO goes further than this and demands that more emphasis should also be granted to peri-urban health center attachments where diseases like cholera are prone than has been in the past. Such attachments would provide the EHOs with problem solving skills specific to this environment.

Although the lecturers felt they had adequately provided skill in construction of drainage systems and ventilated pit latrines, this knowledge could not be easily applied to the settings in which the EHOs now found themselves in. It is in this area that the PHAST methodologies proved indispensable as they not only provided a platform for an EHO to devise relevant construction projects in that particular community but also discovered how to mobilize the community into finding a sustainable solution to their own public health needs. Both the EHO and the member of the community involved in such a program became potential resource persons for their peers in a similar setting. This is a key strategy in supplying the current EHO with the skills required in the community he/she will be working in and providing sustainable development in a community. Therefore incorporating such a program into the college curriculum would serve to eliminate the knowledge and skills gap that exists now in the current peri-urban related EHOs. PHAST methodologies incorporated in the curriculum are best demonstrated by

the suggested community based training illustrated in the study example already mentioned by Kitagwa (2007). The study further demonstrated how trainers and the supervisors from district health offices worked together in the training of the EHO. The result was the creation of room for the training to address future demands of the EHOs' role.

5.5. Adequacy of numbers

The interesting twist from the researcher's perspective was the finding that there was an adequate number of EHOs in the district. Contrary to our assumption, the supervisors believed that they had enough 'members of staff' (EHOs) to tackle the challenges of Cholera prevention in the peri-urban areas of Lusaka. It was brought to light that actually each health center had at least one EHO which was considered acceptable. This could probably be due to the fact that Lusaka being the capital city had the usual cluster associated with professionals located in the cities as opposed to the rural areas. Therefore despite the numbers reflected in literature of too few EHOs to the population in the country, the cluster effect changes the scenario in the capital city.

5.6. The Value placed on the EHO's Role

Even though it did not take prominence during the FGDs in this study, it was interesting to note that the assumptions I had as researcher concerning the "sanitary workers" preferring to be recognized as health care givers proved to be unfounded in this scenario. Actually, these promoters of proper sanitation (the EHOs) projected a sense of pride in the sanitation activities they were involved in except when referring to times when they were hindered by the lack of transport.

Ayee and Crook (2006) in their research study of EHOs in Ghana faced a similar unexpected response regarding their assumption of the EHOs attitude towards their role especially after proving that EHOs were paid poorly, had low levels of training and lacked necessary equipment and yet they portrayed a positive outlook to their occupation. In this case their attitude was attributed to a strong organizational culture reflected in their shared values, sense of appreciation by management and community.

It is this last factor that is affecting the attitude of the EHOs in this study, too, as they have had to shift to a more advisory role making them more interactive with the community to feel appreciated than when they were mainly sanitary inspectors and law enforcers.



Chapter six: Conclusion

The study's findings show that the EHOs perceive cholera outbreaks to be a result of the existence of peri-urban areas which are unplanned, have poor sanitation and poor hygiene practices, all of which they believe are insurmountable. Therefore, they have adapted and defined their role in such a community as one of primarily conducting environmental health awareness and ensuring logistical preparedness to limit the spread of a predictable cholera outbreak.

Although they do not allude to the transition of their role themselves, it was noted that compared to their predecessors, the current EHO has been placed in a position where his/her role has taken up other obligations that need fresh skills which may not be available in the EHO training curriculum that is currently running at the two institutions of learning referred to in this study.

While the lecturers tend to believe that their institutions' curriculum is to a great extent sufficient for the current demands of an EHO, they need more insight into the current demands of an EHO in a specific setting. In order to achieve this, they have to work together with the supervisors at the district office as well as the health center. A new approach to providing relevant content to the curriculum should be devised which will cater for the constantly changing environment the EHO in a peri-urban setting faces and inevitably the skills demanded.

It is in this area that both policy makers, with the institutions of learning have to join forces to provide the skills demanded by the new responsibilities of mobilizing community members, supervising and enforcing laws in a setting where service providers under private ownership are more the norm than government owned as is with garbage collection and water supply. Specifically they should mainstream the principles of PHAST methodologies into the college curriculum. The current set up where it has been reserved for in-service training has not been effective as few if any of the recent graduates have been qualified in PHAST yet are expected to perform effectively by their superiors. Leaving such programs to be advanced by the local district budget has not proved fruitful. This is a task that should be spearheaded by the Ministry of Health as it has been observed that its programs sometimes disrupt those of the district. This central office should synchronize the training programs arranged by itself with those set at the

district to link with those that have been set as a priority at district level. To achieve this more coordinated work of the health information system needs to be established.

The Ministry of Health as the key policy maker in the field of an EHO also needs to establish a platform where all stake holders can notify of their expectations of an EHO and also gain understanding of the boundaries of this role to reduce on the amount pressure an EHO experiences from conflicting expectations of superiors. Significantly is the need to create an audience which will gain an appreciative stance of the preventive nature of the role of an EHO especially among the lecturers and supervisors at the district as well as at the health centre. Perhaps such meetings of key role players in an EHO's environment would also serve to focus on activities which have been prioritized by all stake holders towards preventing cholera and other diarrhea diseases.

The Environmental Health Policy which lies under the domain of the Ministry should be revised to clearly state who is responsible for which task especially in terms of preventive health measures and to incorporate the new tasks that define the role of an EHO in various settings. Currently it lags quite far behind the needs of both the EHO in terms of guidance and training and providing the skills necessary to the community they serve. Clarification of tasks and up dating of documents such as the Food and Drugs Act, the Public Health Act and other by-laws formulated by the local councils (which the EHO's include as part of the training manuals in college and guideline documents in their daily activities) would improve the EHOs effectiveness. It would also reduce the tensions they face in satisfying the various key role players who would now be on the same page with such up to date "manuals". Additionally, it would promote a better flow of government resources towards plainly stated preventive measures and how they are achieved. Currently these measures as shown in this study are to a great extent donor reliant and this has not promoted sustainable development which should improve water quality or sanitation.

The supervisors with the help of central office should emphasize the need to have the strategies employed by EHO's in their zone researched and proven effective for their peculiar setting. This would provide the EHOs with confidence in their work and perhaps a better outlook towards the eradication of cholera. Another area that lies in the domain

of the supervisors is the provision for a better transport system which will allow the EHOs to conduct more visitations in the community and identify potential cholera risks. Placing these factors as part of a strategic early warning system would curtail cholera before it spirals into an epidemic. Lack of transport seems to be a major deterrent to the effectiveness of an EHO from their perspective and solving it could reduce the number of challenges faced by the EHO.

Yet in the light of all these challenges, the EHOs give the impression of commitment to their appointed work that they do whatever their superiors' desire of them. Whether they agree with the interventions or not, they put in their worth and expect the community to understand that change could happen if everyone took and applied the prevention measures.

Additionally, even though appearing to be frustrated by the idea of being regarded as the ones solely responsible for the general sanitation of the communities served, the EHO still diligently continues to go door to door to advise people how to manage their surrounding and the designated places where to throw the garbage for collection by the now privatized/commercialized service providers. Therefore, it would not be surprising if the EHO had in despair given up on the work being done but to the contrary they seem more committed to do whatever they are asked to do. Indeed one would expect that with such an amount of challenges the EHOs would give up but they do not. Instead they muster their efforts to having all logistics in place.

With a clearly defined role and united expectations from stakeholders it would be easier to identify the gaps that need bridging in order to make the EHO more effective. The limited funds available would be utilized efficiently and the impact will be easier to identify. Success in the desired areas would encourage more community empowered development and advance the input of EHOs in preventive primary health care in the community. Then perhaps one would read of a free cholera zone in Lusaka's peri-urban areas.

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APPENDIX

1.0 Guide for Focus group Discussion:

Introduce self and colleague

Thank everyone for coming

Read out purpose for study as written on information sheet

Hand out information sheet and consent form

Emphasize confidentiality

Participant introduction

Begin discussion with “I would like us to recall the outbreak of 2006 in Lusaka district....

Skills and Role

1. What actually happened in those affected areas?
2. What do you think were the causes of that outbreak of cholera?
3. Were you involved in managing it at all? How?
4. What routine work do you do on a daily basis regarding cholera?
5. Did you feel prepared to handle this outbreak? Why and why not?
6. What made that outbreak worse than before in terms of the cholera cases?
7. What measures were put in place to stop that from recurring?
8. How do you determine which areas have greater need regarding cholera control in your Zone?
9. Is there any water source and sanitation monitoring that takes place? Probe: How is it done? Any records? Who are they passed on to?
10. Is there any cholera prevention sensitization program conducted in your zone? When and how often?

Training

11. How and where did you do your practicals? Probe: Were you sent into the Lusaka peri-urban community to work during training?
12. How were the courses structured? Did they have any situational problem solving such as tackling cholera in Lusaka?

13. What was taught at college regarding assessing priority and vulnerable groups in your zone?
14. Does college or in-service offer courses in monitoring and evaluation of community programs or PHAST?
15. What has monitoring and evaluation of water and sanitation programs or PHAST have to do with cholera prevention?
16. Looking at what you have had to face with cholera, what would you propose to include in an EHO training syllabus, if any?

Support

17. What types of materials are provided for cholera prevention campaigns? Probe: Are they adequate? If not, how can this be improved?
18. What policies are in place to help contain cholera especially in Lusaka?
19. What do you think you need as an EHO to stop Cholera?

3.0 Guide Questions for Interviewee:

3.1 Category: EHE (supervisors 1, 2, &3).

Introduce self

Thank Participant for availing time.

Introduce purpose of study as written on information sheet

Hand out information sheet and consent form

Emphasis confidentiality and that further permission will be sought if any specific individual reference needs to be done.

Begin Interview with:

I would like us to spend some time reflecting on the last outbreak of 2006 and how it affected your office and the EHO's you supervise

Role and Skills

1. Exactly what brought about that outbreak?
2. How did your office get involved?
3. What activities were specifically done by EHOs under your jurisdiction?

4. Did you feel amply prepared to tackle this challenge as a district? Why or why not?
5. Did the EHOs have the necessary skills to cope? If not, what should they have done?

Support

6. What resources were specifically availed for cholera prevention then? How about now?
7. What was put in place by your office or the Ministry of Health to prevent an occurrence such as the last one?
8. Are there any policies that specifically address cholera? If yes, how have they been implemented?

3.2 Category: Lecturer



Introduce self

Thank Participant for availing time.

Introduce purpose of study as written on information sheet

Hand out information sheet and consent form

Emphasis confidentiality and that further permission will be sought if any specific individual reference needs to be done.

Begin Interview with: I am sure you have heard and read much of the cholera outbreaks we have had in the recent past. I would like to get your views from a trainers' point of view on what EHOs can do to avert such recurrences of the disease.

1. In what way would you relate your work to EHOs? Which courses do you teach?
2. Are there particular courses which cover prevention of diarrhea related diseases?
3. How are the courses structured in your college?
4. How do they prepare an EHO to tackle cholera in say? (Mention area).
5. Is there any relation between the course and the setting one will work in?

Probe: Do they include problem solving? Community based training?

6. What do you perceive the role of an EHO is in a community such as Lusaka?



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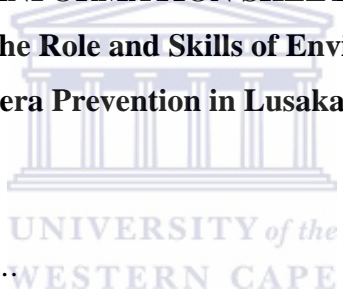
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INFORMATION SHEET

**Exploring Perceptions on the Role and Skills of Environmental Health Officers
In Cholera Prevention in Lusaka District**



Dear.....

My name is Hilary Chibiya. I am is a student studying for a Masters Degree in Public Health at the University of the Western Cape and stationed at Food and Drugs Control Laboratory in Lusaka. To attain my qualification I need to complete a Mini - Thesis in the area of Public Health. My choice of topic has to do with the incidence of cholera in the Lusaka district with consideration to the role played by Environmental Health Officers. I would be glad to have your rich input in this study.

The Purpose of the study

There is a need to reduce the number of waterborne related diarrhea cases especially cholera in Lusaka district. One way to achieve this is to ensure the Environmental Health Officers involved in this work have the necessary skills and knowledge of the specific role they play in averting disease such as cholera.

The study will try to identify the factors that promote EHO preparedness and effectiveness in prevention or response to outbreaks. The major intention is to provide a platform for a probable review of EHO training and formulation of strategies for the aversion of outbreaks in future.

Who are the participants?

The main participants are the Environmental Health Officers under the Lusaka Urban District Health Management Team. Other participants are the Environmental Health Expert and two lecturers from the EHO related colleges.

What is expected from the participant?

The participant will be requested to attend either a focus group discussion or an individual interview which will be conducted by me with the assistance of a colleague. All information will be regarded with the highest confidentiality and only used for the purpose of this research. All documentation signed will be kept under lock and key and will be gotten rid of immediately the research concludes.

What will the Participant expect?

The participant will be expected to express her/his views from a personal rich vast experience on which factors could help reduce cholera outbreaks. There will be no financial gain except that where applicable transport to and from venue will be refunded.

Can you withdraw from the study?

You are at liberty to refuse to participate or even withdraw from the study without any reasons given as this is supposed to be voluntary. Your decision will not implicate your employment in anyway.

Contact

You are free to ask any questions and for more information, you may contact me or my head of department, Mrs. Mazhamo, at Food and Drugs Control Laboratory situated at the University Teaching Hospital premises, on telephone number 211 252855.

Alternatively you can contact my supervisor Professor Uta Lehmann at University of the Western Cape: ulehmann@uwc.ac.za.

If you are willing to participate please sign the consent form below.

Consent form

I have been informed of the purpose of this study and what my participation involves. I also understand that I can withdraw from the study at any time, without having to give any reason and that the study is completely voluntary. I also understand that the findings will only be used for research purposes.

Signature.....Date.....

Witness.....

