

**ROLE OF ENVIRONMENTAL EDUCATION IN THE TRANSFORMATIVE AGENDA
OF ZAMBIA'S MINISTRY OF HEALTH**

By

Hector Kunda

**A dissertation submitted to the University of Zambia, School of Education in partial
fulfilment of the Requirements for the Award of Master of Education in Environmental
Education.**

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DECLARATION

I, **Hector Kunda**, do hereby declare that the dissertation hereby submitted is my own work and that it has not previously been submitted for any degree, diploma or any other qualification at the University of Zambia or any other University.

Signed:

Date:

APPROVAL

This dissertation by Hector Kunda is approved as a partial fulfillment of the requirements for the award of the Master of Education degree in Environmental Education by the University of Zambia.

Examiner 1

Signature

Date

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Examiner 2

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Examiner 3

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Chairperson/
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Supervisor

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ABSTRACT

Environmental Education (EE) is explicitly acknowledged as one of the main strategies to address environmental challenges in Zambia and that it must be integrated in all institutions. In this regard, Zambia's Ministry of Health (MoH) formulated environmental management strategies and repositioned itself in the context of a new and growing cadre of qualified environmental educators who could assist the MoH implement environmental sustainability strategies. However, most of the strategies formulated were more on control and treatment of diseases than prevention of diseases from the source. While it is known that medicines save lives, a fundamental cause of death is not only the delay or absence of medical support but that, today, knowledge about quality health and living conditions of our people has not been fully put at the disposal of citizens. This study, therefore, sought to establish the role of environmental education in the transformative agenda of Zambia's MoH, to establish environmental education activities used by the MoH in the year 2019, to determine environmental management strategies that the MoH had been using in promoting national health and to explore the paradigm guiding the MoH's transformative agenda. The study was guided by a qualitative research approach. By using a descriptive survey, the target population included professional providers and users of health care services in Zambia. A sample size of 40 participants of which five were key informants, 20 health care providers and 15 potential users of health care services was used. Semi-structured interview schedule and observation guide were used to collect data. Thematic analysis was used to analyse data and data validation was done through mirror triangulation. The findings of this study clearly indicated that there was little awareness about EE among the participants resulting in poor attitudes and mindset towards their environment. It is recommended that the MoH should consider incorporating EE in its establishment and structures to assist in the prevention of diseases from the source and that the MoH should develop partnerships and collaboration between the health sector, communities, private sector, other government departments and stakeholders that would influence the well-being of Zambians and their communities.

Key words: *Transformative agenda, Environmental education and Health promotion.*

DEDICATION

This dissertation is dedicated to my father Mr. James K. Kapansa, my late mother Mrs. Ireen M. Kapansa, my wife Priscilla S. Sumpa, my children, my brothers and sister for the gift of formal education and helping me to realise my full potential in life, and for their encouragement and moral support.

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ACRONYMS

AIDS:	Acquired Immune Deficiency Syndrome.
AMCEN:	African Ministerial Conference on the Environment.
CEMP:	Community Environment Management Programme.
CSO:	Central Statistics Office.
ECZ:	Environmental Council of Zambia.
EE:	Environmental Education.
EHIA:	Environmental Health Impact Assessment.
EHTs:	Environmental Health Technologists.
EMS:	Environmental Management Strategy.
ESD:	Education for Sustainable Development.
GRZ:	Government of the Republic of Zambia.
HiAP:	Health in All Policies.
HIV:	Human Immunodeficiency Virus.
HIVST:	HIV Self Testing.
HMIS:	Health Management Information System.
LCC:	Lusaka City Council.
LCMS:	Living Conditions and Monitoring Survey.
MLGH:	Ministry of Local Government and Housing.
MNCH:	Maternal, Neonatal and Child Health.
MoH:	Ministry of Health.

MTENR:	Ministry of Tourism, Environment and Natural Resources.
NCD:	Non Communicable Diseases.
NGO:	Non- Governmental Organisations.
NPE:	National Policy on Environment.
PHA:	Public Health Act.
PMTCT:	Prevention of Mother to Child Transmission.
SDG:	Sustainable Development Goals.
STI:	Sexually Transmitted Infections.
UNEP:	United Nations Environment Programme.
UNESCO:	United Nations Educational, Scientific and Cultural Organisation.
UNZA:	University of Zambia.
UTH:	University Teaching Hospitals.
VMMC:	Voluntary Medical Male Circumcision.
WHO:	World Health Organisation.
WMU:	Waste Management Unit.
ZDHS:	Zambia Demographic and Health Survey.
ZEMA:	Zambia Environmental Management Strategy.

DEFINITIONS OF KEY TERMS

Determinants of Health:	The range of personal, social, physical, economic and environmental factors that determine the health status of individuals or groups of people.
Environmental Education:	In this case, Environmental Education is all about using education to care for and address health issues of individuals, society and the environment.
Health Literacy:	The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.
Health Promotion:	It is the process that enables people to improve or have greater control over their health.
Sustainable Development:	It is a kind of development that meets the needs of the present without compromising the ability of the future generations to meet their own needs.

CHAPTER ONE: INTRODUCTION

1.1 Overview

Chapter one of this study brings out its background, environmental determinants of health such as social and economic environments, physical environments and personal health practices and coping skills. It further explains the environmental education context of the study, statement of the problem, purpose and specific objectives of the study, general and specific research questions, significance of the study, thesis statement and the conceptual framework which shows the implication of having a proactive health conscious and practice community.

1.2 Background

In liaison with international treaties and agreements on environment, the Zambian government formulated the National Policy on Environment (Government of the Republic of Zambia (GRZ), 2007). The aim of this policy was to ensure sound environmental management within a framework of sustainable development in Zambia. In furtherance of the aim of the National Policy on Environment (GRZ, 2007), the same policy had promulgated that “Environmental Education and awareness needed to be promoted through formal, informal and non-formal education channels by all government institutions, Non-Governmental Organisations (NGOs) and the private sector” (GRZ, 2007).

Furthermore, the Zambian government enacted an Act of Parliament in order to facilitate the smooth implementation of Environmental Management and Environmental Education in Zambia. The Act was called, the Environmental Management Act No. 12 of 2011. This Act stated that, subject to the constitution, every person living in Zambia had the right to a clean, safe and healthy environment. The Act further directed that “within three years of the commencement of this Act, each Minister shall ensure that an environmental management strategy for the Ministry to which the Minister is responsible is prepared and submitted to the Agency for approval” (The Environmental Management Act 2011, Section 22 Subsection 1).

Therefore, the Zambia’s Ministry of Health (MoH) was experiencing a double driving force consisting of a requirement to comply with the Government’s National Policy on Environment (NPE) with its legislative framework of the Environmental Management Act, No. 12 of 2011, on

one hand, and changing societal concerns, attitudes and lifestyles around environmental sustainability, on the other. In order to address this driving force, it became necessary for the Ministry of Health to re-position itself in the context of a new and growing cadre of qualified Environmental Educators from training institutions like the University of Zambia (UNZA), who were equipped from their training to assist the MoH implement institutional environmental sustainability strategies. It was from this background that an interest developed to investigate the use of Environmental Education in the agenda of Zambia's Ministry of Health.

1.2.1 Environmental Determinants of Health

The health of individuals and communities is to a large extent, dependent by the environments and circumstances in which they live and operate. These factors are commonly referred to as the determinants of health or conditions that make people healthy or not and include social and economic environment, the physical environment and the person's individual characteristics, behaviour and contribute to the high burden of diseases. Determinants are the factors that contribute to the start and spread of diseases. Ironically, the environment, which sustains life, has itself become a threat to human survival. This is because environment related diseases are increasing and recent studies at various levels place environmental factors high on the list of determinants of health particularly in the developing world (Gnanakan, 2010).

1.2.2 Social and Economic Environments

The social and economic environment is a major determinant of health. It includes factors such as the demographic situation and trends, income and socio-economic status, education and literacy, employment and working conditions, and gender.

- Demographic situation and trends: The population of Zambia had rapidly grown from about 3 million people in 1964, to 13.2 million in 2010. The average life expectancy at birth had also increased from 40.5 years in 1998 to 51.3 years in 2010 (CSO, 2010). This rapid population growth placed an increasing burden on the national economy, particularly the country's capacity to keep pace with the health needs of a rapidly increasing population and its dynamics.

- **Nutrition:** Access to good nutrition is a major and cross-cutting determinant of health. In Zambia, malnutrition underlies up to 52 percent of all under five deaths. The stunting rate in under-five children currently stands at 45 percent, with 5 percent being accurately malnourished (wasted) and 15 percent underweight. The rates of micronutrient deficiencies are also high, with 53 percent vitamin A deficiency and 46 percent iron deficiency anaemia (Zambia Demographic and Health Survey, 2007).
- **Social and Cultural Environments:** Zambia is among the most politically stable countries in Africa, and as continued to enjoy peace since its independence in 1964. The country has a multi-cultural society, characterised by different racial and ethnic groups, religious and traditional groupings, urbanisation, and increasing access to the internet and other sources of information, with significant potential for promoting good health. However, there are some social, cultural and religious beliefs and practices that negatively affect health. These include cultural practices such as sexual cleansing of surviving spouses, unsafe traditional male circumcision procedures, early marriages for the girl child and negative patriarchal traits that perpetuate the low status of women, risky traditional health practices and gender discrimination in favor of males. Gender considerations are important for both health service delivery and also for assessing the health sector outcomes. Some of the pernicious manifestations of gender inequality in Zambia include the disproportionately high ratio of women in politics and formal employment. Besides, unequal relationships shape health disparities through differences in environmental exposures and access to resources, including access to quality health care (Schulz, *et al.*, 2002).
- **The family and community:** The families and communities have an important role in shaping the character and behaviors of the people. Peer pressure also has potential to mislead people, particularly the adolescents, into practices that are risky to health such as alcohol and substance abuse, smoking, sexual abuse, and violence. These could lead to severe consequences on health, including the risks of contracting HIV and other Sexually Transmitted Infections (STIs), trauma, teenage pregnancies and mental illness.

1.2.3 Physical Environment

Factors related to housing, air quality, water quality, safe houses and transportation systems all contribute to health. Poor access to safe water and good sanitation, poor housing and unsafe food has continued to drive diseases, such as diarrhea, including cholera. The Zambian Demographic and Health Survey (ZDHS), (2007) indicates that only 41 percent of the households in Zambia have access to improved sources of water than those in rural areas (83 percent compared with 19 percent). On the other hand, the 2015 Living Conditions and Monitoring Survey (LCMS) also indicated that about 67.7 percent had access to safe water sources in the country. Furthermore, 51.6 percent of households in rural areas had access to safe water while 89.2 percent of households in urban areas had access to clean and safe water. Limited access to safe water and sanitation facilities accompanied by poor hygiene is associated with skin diseases, acute respiratory infections and diarrheal diseases, which is the leading preventable disease (ZDHS, 2013-2014). Overall, 25 percent of households in Zambia have no toilet facilities. This problem is more common in rural areas (37 percent) than in urban areas (2 percent). Besides that, the capacity to handle solid waste in Zambia is less effective. In most urban areas in Zambia, only a small fraction of the waste generated daily is collected and safely disposed. The rest is anyone's guess. For Lusaka, the city generates about one million tonnes of waste annually, according to the city's Waste Management Unit (WMU), but only half of this is taken to the designated dump site (Zambia Daily Mail Limited, October, 15, 2017).

For years, waste management had emerged as one of the greatest challenges facing Lusaka City and other towns in Zambia. It was not a new problem though, but the volume of waste being generated continued to increase at a faster rate than the availability of the city authorities to improve on the financial and technical resources needed to parallel this growth. The Lusaka City Council (LCC) was struggling to manage the waste under tight budget; highly inadequate and malfunctioning equipment. This was evidenced from the inefficient collection practices with variable levels of service, poor and unhygienic operating practices in waste management in the city and the local authority seemed too handicapped to redeem the situation. It was facing challenges in managing waste because of the indiscriminate illegal dumping and littering, and a public which was seemingly not sensitive to the garbage around it or indeed had any awareness of what represents responsible waste management.

1.2.4 Personal Health Practices and Coping Skills

Personal health practices and coping skills refer to those actions by which individuals can prevent diseases and promote self care, cope with challenges and develop self-reliance, solve problems and make choices that enhance health. Therefore, personal character and commitment to health seeking behaviors, including prevention of disease, promotion of health and early seeking of appropriate treatment and care can enhance health status. In Zambia, there were attempts to promote these practices and skills through strengthening of health promotion and education (Health Management Information System (HMIS), 2010). However, this area of health was not adequately developed and required significant strengthening to meet the required levels of health awareness and education among individuals and communities as multiple risk taking behaviors including such hazardous combinations as alcohol abuse, drug use and unsafe sex, remained particularly high among the youths especially young women.

1.2.5 Health Status in Zambia

The burden of diseases in Zambia is high, and is largely influenced by the high prevalence and impact of communicable diseases, particularly Malaria, HIV and AIDS, Tuberculosis (TB) and Sexually Transmitted Infections (STIs). The country is also faced with a high burden of Maternal, Neonatal and Child Health (MNCH) problems, and a growing problem of Non-Communicable Diseases (NCDs) and heart diseases, chronic respiratory disease, blindness and high refractive defects, and oral health problems (ZDHS, 2013). Currently, the top ten causes of morbidity and mortality in Zambia include Malaria, respiratory infections (non-pneumonia), diarrhea (non-blood), trauma (accidents, injuries, wounds and burns), eye infections, intestinal worms and anaemia. The country is also faced with the high burden of the HIV and AIDS epidemic, which has significantly impacted on the morbidity and mortality levels across the country (MoH, 2010). Moreover, analysis of disease trends from 2011 to 2015 indicates that malaria remained the leading cause of morbidity and mortality in the country. With an HIV prevalence estimated at 13.3 percent, Zambia is one of the most affected countries in the world (CSO, ZDHS, 2013-2014). Therefore, we needed to create a society in which everyone has a chance to live a long and healthy life through Environmental Education.

1.3 Environmental Education Context of Study

Environmental Education as defined by UNESCO in ECZ (2001) is “a permanent process in which individuals gain awareness of their environment and acquire the knowledge, values, skills, experiences and also the determination to enable them to act individually and collectively in order to solve present and future problems.” On the other hand, Sustainable Development Goal (SDG) number three seeks to ensure health and well-being for all at every stage of life. The aim is to improve reproductive and maternal and child health, end the epidemics of HIV/AIDS, malaria, tuberculosis and neglected tropical diseases; reduce non-communicable and environmental diseases; achieve universal health coverage, and ensure universal access to safe, affordable and effective medicines and vaccines (SDGs No 3, 2016). UNESCO (2008) also asserts that, “Environmental Education is about learning how to care for the Earth, other people and ourselves, and it is the central theme for the wellbeing of the environment and human kind.” The wellbeing of human kind is dependent upon the wellbeing of the environment. Therefore, this study is in the context of Environmental Education because it seeks to instill full-scale awareness among the public from an early age on the health dangers found in their environments, how diseases are brought about and how to avoid or prevent diseases from harming the public. Moreover, it seeks to educate the public on how to care for Earth, other people and ourselves. Environmental Education increases public awareness and knowledge about environmental issues or problems. In doing so, it provides the public with the necessary skills to make informed decisions and take responsible action. Education leads to attitude and behavioral change and when incorporated in the MoH, it could lead to behavioral change by the public and health workers on how they should relate to each other and their environment.

1.4 Statement of the Problem

There were inefficiencies in the reactive model of the Zambian Ministry of Health where health institutions waited to treat diseases rather than preventing them at their source. While it is known that medicines save lives, a fundamental cause of death is not only the delay or absence of medical support but that, today, knowledge about quality health and living conditions of our people has not been fully put at the disposal of citizens. In as much as the Zambia’s MoH had played a significant role in the quest to prevent diseases by coming up with preventive measures

that could help promote health and manage the environment well, diseases still escalated. This was evidenced by the 2017/2018 cholera outbreak which left a lot of people sick and over 100 people dead, outbreak of typhoid in Chipata compound of Lusaka province in the year 2018 and high levels of waste found in the environment that could break into communicable diseases. This implied that a lot more work still remained to be done in order to prevent diseases from the source. People's attitudes and mindsets toward their environment were very poor because they lacked the knowledge on how they should stay healthy and live in harmony with the environment. There was also scarcity of knowledge in scholarly studies in Zambia as regards knowledge about protecting the health and living conditions of people through Environmental Education. As such, this study would bridge this knowledge gap.

1.5 Purpose of the Study

The purpose of this study was to establish the role of Environmental Education in the transformative agenda of Zambia's Ministry of Health.

1.6 Specific Objectives

The following specific objectives were addressed:

- i. To establish environmental education activities which were used at the time of conducting this study in the year 2019.
- ii. To determine Environmental Management Strategies that the MoH had been using in promoting national health.
- iii. To explore the paradigm guiding the Ministry of Health's transformative agenda.
- iv. To establish how EE could be used in the transformative agenda of Zambia's MoH.

1.7 General Research Question

What is the role of Environmental Education in the transformative agenda of Zambia's Ministry of Health?

1.8 Specific Research Questions

In light of the above objectives, this study attempted to address the following research questions:

- i. What environmental education activities was the Ministry of Health using in the year 2019?
- ii. What environmental management strategies had the Ministry of Health been using in the provision of health services in Zambia?
- iii. What new paradigm was the Ministry of Health using in its transformative agenda to health promotion?
- iv. How can Environmental Education be used in the transformative agenda of Zambia's Ministry of Health?

The next segment explains the significance of this research.

1.9 Significance of the Study

This study was necessary to be carried out because its findings may reinforce the implementation of the strategies of the National Policy on Environment. The findings may also assist appropriate decision makers to decide the use of Environmental Education to the MoH and its findings may also pave way for similar studies regarding the degree to which the Non-Governmental Organisations, private organisations as well as industry and government line ministries are complying with dictates of the Environmental Management Act No. 12 of 2011 on implementing environmental management strategies within their organisations. But, above all, this study may stand out as one of the starting points in education planning for Environmental Education in the MoH and further researches. In this way, the study may inform training institutions on developing relevant skills, knowledge and attitudes for Environmental Education graduates to meet the health needs of clients and health institution. Environmental Education would be vital in the Ministry of Health because, with it, so many diseases could be prevented as well as enabling the Ministry to cut on the cost associated with treating diseases by the government.

1.10 Thesis Statement

The Ministry of Health's effort to address diseases and promote good health would always prove futile without incorporation of Environmental Education as a preventative measure at the source of the problem. Therefore, incorporating Environmental Education in the MoH could help combat disease burden and promote good health.

1.11 Conceptual Framework

The conceptual framework on Figure 1.1 helped give a clear picture and overview of the general intention of the study and this served as a compass in directing the researcher during the actual study process not to go astray of the intentions of the study and this contributed to fruitful findings.

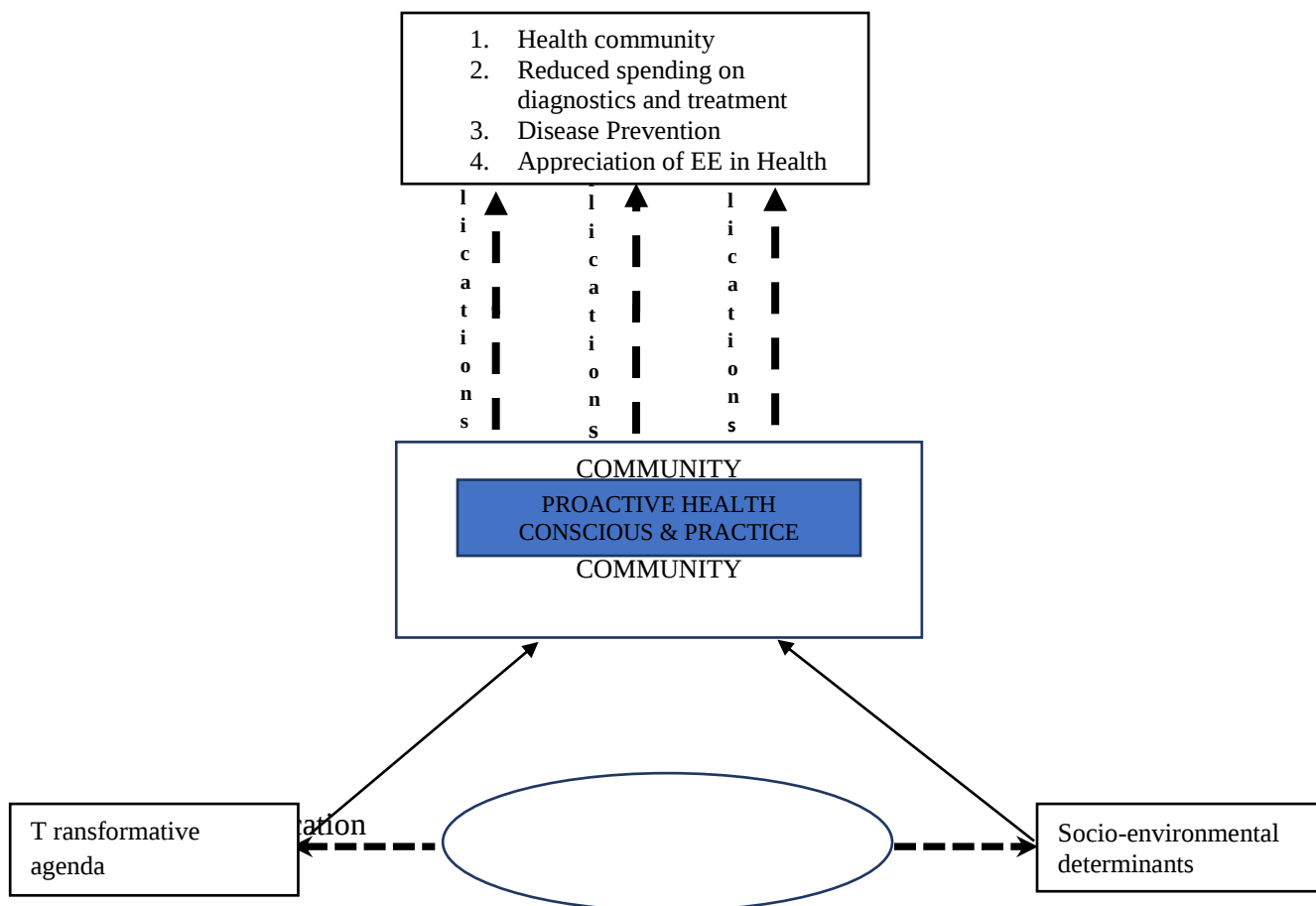


Figure 1.1: Conceptual framework on the role of EE in Zambia's MoH.

Figure 1.1 on page nine illustrates the role EE could play in the MoH. The health of individuals and communities is, to a large extent determined by the environment and circumstances in which they live and operate. These include the social and economic environment; the physical environment and the person's individual characteristics, behavior and circumstances. EE could therefore, educate the community to understand the relationship between people and the environment in determining their health. EE could also be used as a determinant of health or condition that could make people healthy or not. The key socio-environmental factors that EE could address included state of the environment, standards of shelter, clean and safe water, sanitation and other basic needs, levels of environmental literacy and education, social, cultural and religious beliefs and practices and attitudes towards health seeking or risky behavior, and relationships with friends and family. These factors all significantly impact on the health status of individuals and communities.

On the other hand, if decision makers in the MoH considered and understood the role that EE could play in their ministry and adopted it, then EE could be used as one of the strategies in improving the health and wellbeing of the community in the transformative agenda of Zambia's MoH. The health sector was more on the reactive part, waiting for diseases to occur and later treated them than on the proactive part, by putting intervention measures before the occurrence of diseases. Therefore, with the incorporation of EE in the MoH, we should be able to see a more proactive community that would be aware of how to take care of their environment and wellbeing to avoid diseases.

Addressing the links between environment and health would be key to disease prevention. Therefore, the implication of EE in the MoH would be that of having a healthy community. People in the community would be aware of what a clean, safe and healthy environment is. There would also be a reduction in spending on diagnostics and treatment drugs, the shift towards a healthy environment for all could yield significant benefits in terms of development, poverty reduction and reduced risks to human health. EE could be vital in health, with it, so many diseases could be prevented as well as enabling the government to cut on costs associated with treating diseases. Most diseases that affected the people were preventable but information was not widely distributed in full. EE looks at environmental well-being and how it affects people. There would also be appreciation of EE in the health sector because personnels in the

MoH would be knowledgeable about all issues concerning the environment through formation of workplace EE committees, hence it could bring about efficiency and effectiveness of designing environmental policies, programmes and their management.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1 Overview

Among the literature available on Environmental Education, there was little published material on the role of EE in health promotion world over, and Zambia in particular. Most of the literature available was on using EE for environmental conservation and sustainable development hence more emphasis for it to be incorporated into the school curriculum. However, this chapter shall discuss literature similar to the study carried out that positively contributed to the study. Literature review allows us to check on what other researchers have done and enables us to familiarise with what they have found on the same topic under investigation. Literature review also identifies gaps in former researches and also acquaints the researcher with the methodologies that other researchers employed in carrying out their research. The first part of this literature review traces Environmental Education and health promotion from Global, Africa and Zambia, and thereafter, the emergence of EE for health promotion as an independent concept from the larger EE movement.

2.2 Environmental Education and Health Promotion: A Global Perspective

Environmental Education is explicitly acknowledged as one of the many strategies to address environmental issues and promote the wellbeing of human kind across the globe. On the other hand, health promotion has become more relevant today than ever in addressing public health problems. The health scenario is positioned at unique crossroads as the world is facing a triple burden of diseases constituted by communicable diseases, newly emerging and re-emerging diseases as well as the unprecedented rise of non-communicable chronic diseases. Globally, there is an increasing focus on preventive health care which has become a key source of cost saving in the health delivery system. A global perspective of the reviewed literature will be presented in a spatial order where selected countries involving India, Norway and Sweden will be focused on.

2.2.1 Environmental Education and Health Promotion in India

Environmental Education in India is more provided by the Universities, Schools of Planning and Management, and Agriculture Universities. It is more on the need for conservation of their multifaceted heritage and teaches newer and environmentally safe technologies. However,

Chittibabu (1987) describes the interaction between education and environment that, education creates the urge for a clean environment and it inculcates in the young minds the basic principles of sanitation and hygiene.

A journal by Kumar (2011) titled “Health Promotion: An Effective Tool for Global Health”, explains the status of health promotion in India. The purpose of the study was to find alternative approaches to health promotion rather than the traditional way of curing diseases. Kumar (2011) believed that health promotion is very relevant today. There is a global acceptance that health and social well-being are determined by many factors outside the health system which include socio-economic conditions, patterns of consumption associated with food and communication, demographic patterns, learning environments, family patterns, the cultural and social fabric of societies; socio-political and economic changes, including commercialisation and trade and global environmental challenges. In such a situation, health issues can be effectively addressed by adopting a holistic approach by empowering individuals and communities to take action for their health, fostering leadership for public health, promoting intersectoral action to build health public policies in all sectors and creating sustainable health systems. Kumar’s study suggested the following strategies of health promotion, first, it should strongly be built into the concept of all the national health programmes with implementation envisaged through the primary health care system based on the principles on equitable distribution and community participation, second, health promotion component to be strengthened with simple, cost effective, innovative, culturally and geographically appropriate models, combining the issue based and setting based designs and ensuring community participation, lastly, effective implementation of health promotion needed to engage sectors beyond health in all policies rather than just the health policy.

Kumar’s study revealed some important strategies to promote health in India as it suggested community participation in health promotion and that it needed to be built into all the policies and if utilised effectively would lead to positive health outcomes. Kumar emphasised more on health promotion because of the rise rate of morbidity and mortality in India and beyond. However, Kumar did not look at the causes of morbidity and mortality in India that should be addressed because most of the morbidity and mortality is related to people’s individual choices and behaviors within the environment in which they live, play and operate. Kumar’s suggestion

on community participation in health promotion also leaves some questions as to whether or not these people from the community have the skills, knowledge or are qualified to implement health promotion strategies. Kumar did not realise the potentiality of having qualified Environmental Educators who could promote environmental awareness in the community through Environmental Education. Therefore, the level of awareness on health related issues from the environment that could bring about diseases is very little among the community members. This study adds more knowledge by focusing on how EE could be used as one of the strategies to promote health. The next segment reviews literature from Norway.

2.2.2 Environmental Education and Health Promotion in Norway

Environmental Education in Norway is very much alive and well. It takes many forms within schools, colleges and universities, and in less formal programmes offered by clubs, associations, government agencies and corporations. Environmental Education's great deal depends on programmes and projects developed at the local community or organisational level by dedicated individuals or groups. Its programmes involve young children and families, youths and adults from a diversity of backgrounds, cultures, genders and ages. The range of Environmental Education programmes represents goals to inform, educate, provide recreational opportunities, and to address local needs, issues and opportunities. In Norway, Environmental Education has been part of the schools' curricula since the 1970s and is used as one of the strategies for sustainable development because sustainable development has been declared a policy goal by the Norwegian government (Per Jarle, 2016). The curriculum is based at teaching pupils to understand and take care of themselves, understand and take care of one another, understand and take care of their local community, understand and take care of nature, understand and take care of the planet and make good sustainable decisions about the future of a democratic society. Heggen (2016) added that "the social and interpersonal aspects are found in understanding and taking care of one another and by interaction that cares for the environment and society in the best way possible, and takes care of nature". Therefore, everyone must take personal responsibility to improve the environment and work toward a sustainable future. Moreover, Norway has kept a more traditional view of learning that provides all children with good development, academic knowledge and good skills, and at the same time give a more comprehensive view of society and the world that surrounds them. Hence, Norwegian children

have benefited from a long tradition supported by strong national policies that emphasise the importance of children developing an attachment and love of nature, as well as an understanding of the interdependency of humans and the natural world (Beery, 2013).

Norway has an impressive and comprehensive health system and has put significant efforts into health promotion. In Norway, health promotion is not just the responsibility of the health sector. The responsibility is shared among individuals, community groups or schools, health professionals, health service institutions and governments. They work together to provide a health care system that promotes health (Fosse and Helgesen, 2017). However, the social economic distribution of health still poses serious challenges for Norwegian public health policies and the prevalence of hypercholesterolemia and hypertension (risk factors of cardiovascular disease) is higher, and the prevalence of overweight and obesity has grown steadily over the past decade. These risk factors put people at an elevated risk of developing other severe diseases and impose a significant burden on the health care system (Government of Norway, 2016).

To address the issue of social economic distribution of health, the Norwegian national government developed public health policies that reflect the health promotion principles, as they are outlined in the Ottawa charter (World Health Organisation (WHO), 1986), particularly by addressing social inequity in health. A government White Paper on social inequalities in health entitled National Strategy to Reduce Social Inequalities in Health was released in 2007 and had a ten year perspective for developing policies and strategies to reduce health inequities. One main point of the White Paper was that “equity is good public health policy” (Norwegian Ministry of Health and Care Services, 2007). This implies a view on public health policies that aims at a more equal distribution of positive factors that influence health. The health promotion elements of the Norwegian public health policy are particularly reflected in the Public Health Act (PHA) that was adopted in 2012. The PHA established a new foundation for societal development based on regional and local challenges and needs. According to the Norwegian Ministry of Health and Care Services (2011), in the proposition underlying the Act, it is stated that, “only by integrating health and its social determinants as an aspect of all social and welfare development through intersectoral action, good and equitable public health can be achieved”. Hence, reducing social inequalities in health by addressing the social gradient is a main aim of the PHA. The gradient

approach to policy action comprises broad universal measures combined with targeted strategies for disadvantaged groups. A gradient approach to policy also necessitates a focus on the upstream determinants of health inequities such as income, education, living and working conditions (Graham, 2004). Besides, one of the principles of public health in Norway is Health in All Policies (HiAP) and the principle implies that equitable health systems are important to public health, but health inequities arise from societal factors beyond health care (Leppo, et al., 2013). HiAP addresses the effects on health across all policies such as agriculture, education, the environment, fiscal policies, housing and transportation. It seeks to improve health through structures, mechanisms and actions planned and managed mainly by sectors other than health. This implies that the impact on health must be considered when policies and actions are developed and implemented in all sectors.

In as much as Norway has put significant efforts into health promotion and fighting risk factors of communicable and non-communicable diseases, the Norwegian Ministry of Health and Care Services has not recognised Environmental Education in its policies to be a more precise strategy for health promotion and educating the public on how they should take care of themselves and the environment because most diseases be it communicable or non-communicable range from personal or other forms of the environment and Environmental Education can be used as an intervention strategy. Instead, Environmental Education in Norway is used as a tool for sustainable development as the public is provided with the knowledge of developing a positive attitude towards the environment.

2.2.3 Environmental Education and Health Promotion in Sweden

Environmental Education in Sweden exists predominantly within the natural sciences and social sciences of education. Sweden has environmentally led the world since the Stockholm Conference in 1972 and in particular the Rio Conference in 1992 where education was emphasised as a key issue in environmental protection (Ozawa, 1996). Hence, Sweden has manifested competence in making people take environmentally responsible actions, taking such actions to the national level. Schools and higher education institutions in Sweden have developed a wide range of innovative and demanding curricula to meet the objectives of Sweden's environmental policy. Upper secondary schools offer more opportunities to develop

environmental awareness, understanding and practical skills. In Sweden, there is a strong emphasis on practical work developed through projects based on contemporary environmental issues and their resolutions. The development of Environmental Education has been well supported by a substantial input of new resources, especially materials developed by the Swedish Environmental Protection Agency and Industry. Universities have also begun to adopt new organisational structures to help develop inter-disciplinary teaching and research teams in Environmental Education (Martin, et al., (1993). Sweden like Norway and other countries has also put more emphasis on environmental and sustainability education which is a multidimensional concept that is a combination of education activities related to ecological, economic and social dimensions. Sustainability issues such as climate change, systemic thinking, world trade, global distribution of wealth and resources, life quality, quality of environment, health, intercultural communication and depletion of natural resources will be explored in respect of education and learning.

Health promotion in Sweden is predominantly left for the registered nurses within the entire health and medical care sector to implement. Registered nurses, who represent the largest professional group in health care service, are important for the development and implementation of health promotion practice in clinical practice and most of them view health promotion practice as both important and valuable, and they have a great interest in working for health promotion. However, nurses find it difficult having needed time to perform good health promotion but they try to discuss health promoting issues if the patient visits the hospital (Decola, et al., 2012). The Swedish government's objective of health care is that health promotion and sickness prevention is a natural part of all health care and treatment (Government Bill, 2002). Having critically analysed health promotion in Sweden, it can be stated that the strategy of using registered nurses in health promotion cannot be very effective because nurses, in their endeavour to work in a health promoting manner, make an effort to be both a medical caregiver and a health educator, and mostly medical care surpasses health promotion hence people are not well informed on how to prevent diseases from the environment and how to take care of their lives in a better way. Sweden shows no complete commitment to health promotion and therefore, health promoting work is taken for granted. The Swedish government should find better ways of health promotion unlike depending entirely on nurses who in their work focus on medical care services. The next section shows reviews from the African Region.

2.3 Environmental Education and Health Promotion: African Perspective

Having shown reviews from different parts of the world in the previous section, this section presents some reviews from selected parts of the African Region such as South Africa, Botswana and Ghana.

The African region has over the years, recognised Environmental Education as an effective means for confronting environmental challenges and identifying future opportunities. In this regard, the African Ministerial Conference on the Environment (AMCEN) views Environmental Education and Training as indispensable to changing people's attitudes towards assessing and addressing their development concerns. Further, Environmental Education is viewed as critical for attaining environmental and ethical awareness, values and attitudes, skills and behavior consistent with sustainable development. In addition AMCEN views Environmental Education to be critical for the acquisition and application of knowledge and action competences for participation as active and informed citizens in the development of an ecologically viable and sustainable society. Environmental Education is also critical for poverty reduction and for ensuring human well-being and sustainable livelihoods development on the African continent (United Nations Environment Programme (UNEP), 2012). Therefore, the African people need to understand environmental issues and risks, and their causes. They also need to develop the values and action competences necessary to respond to and develop alternative solutions and change practices to ensure human well-being and sustainable development.

The African Region has for the past years been advocating for health promotion in all countries of Africa. However, the rise in premature deaths from the double burden of non-communicable and communicable diseases in countries of the African Region remains a major concern given that many of the causes are preventable. Therefore, in recognition of the increasing burden of disease, disability and premature deaths from preventable causes in the African Region and the benefits of scaling up health promotion interventions to address them, the fifty-first session of the Regional committee, in 2001, approved the health promotion strategy for the African Region and adopted a related Resolution AFR/RC51/R4 to foster actions that enhance physical, social and emotional well-being (WHO, 2001). The interventions seek to promote healthy behaviors and empower individuals, families, households and communities to take necessary action and to reinforce the desired structural changes through policies, legislation and regulations. In addition,

during the period 2004-2010, WHO provided technical support to 16 countries to develop their national health promotion policies and 12 countries to develop their strategic plans. Guidelines for implementing health promotion tools for non-communicable diseases prevention and control were held in Benin, Uganda and Zimbabwe between 2007 and 2010 (WHO, 2013).

Despite these milestones in trying to promote Environmental Education and health in Africa, gaps and challenges still exist with specific regard to stewardship, delivery of interventions, community participation and empowerment, and sustainable financing. This research added another new idea for health promotion by suggesting Environmental Education to be one of the strategies for health awareness to the public.

The government of South Africa has responded to the environmental crisis by developing a range of new policies. First, and most importantly, the environmental rights of all South Africans are enshrined in the 1996 constitution. Section 24(a) of the constitution states that everyone has a right to an environment that is not harmful to their health or well-being. The constitution thus signaled a national commitment to environmental action. Concern for environmental issues in South Africa was also reflected in The Reconstruction and Development Programme (RDP) (1994) which advocated programmes to “rekindle our people’s love for land, to increase environmental consciousness amongst our youth, to coordinate environmental education policy at all levels and to empower communities to act on environmental issues and to promote an environmental ethic.” In addition, The National Health Promotion Policy and Strategy 2015-2019 of South Africa has also advocated for the creation of an enabling environment that promotes healthy behavior. Creating a supportive environment consists of advocacy to alter or adapt social, political, economic or physical surroundings in ways that would help to maintain and enhance health. In its quest to have a healthy environment, the South African Health Promotion Policy emphasised on establishing and maintaining health promoting creches and early learning centres that would promote safe and healthy environments for example, clean water and adequate sanitation and personal hygiene practices. It further stated to advocate for health promoting schools that would complement the work of the school Health Teams through empowering learners and educators to undertake healthy lifestyle practices including healthy eating habits, prevention of substance abuse, increased physical activity and safer sexual

practices, and to work with the private sector and labour unions to promote healthy lifestyle practices within the work place.

In as much as we appreciate the South African constitution of 1996 and the National Health Promotion Policy of 2015-2019 on the determination to have a healthy people in a healthy environment, the two documents have not recognised the importance of having Environmental Educators who would foster Environmental Education in the health department at all levels. Environmental Educators who are trained and equipped with skills on how to promote environmental awareness and sensitise people on how to care for themselves and the environment for the promotion of health in the country. In short, the South African constitution of 1996 and the National Health Promotion Policy and Strategy of 2015-2019 have not realised the role that Environmental Education could play in the health sector to promote national health. Moreover, health promotion research and evaluation in South Africa is limited and there are also very few trained health promotion specialists either capable or in the position to inform politicians and opinion leaders about the relationship between health and social determinants, and the evidence of effectiveness of health promotion. Therefore, occupational standards for health promotion education and training are needed.

Botswana has no overall education policy. However, the Botswana vision 2016 for Environmental Management in (Ketlhlilwe, 2003) calls for an informed and environmentally educated nation. In addition, the National Conservation Strategy (Botswana National Conservation Strategy, 1990) and the National Environmental Education Action Plan of 1997-2003 make provision for Environmental Education (IUCN & SADC ELMS, 1999). Furthermore, the Ministry of Environment, Wildlife and Tourism (MEWT) through the Department of Environmental Affairs (DEA) had also recognised the importance of public education to influence behavior change towards more sustainable lifestyle choices. To implement the policy, Environmental Education has been infused across the curriculum in primary school education and resource materials are being produced. Moreover, pilot projects are being undertaken to encourage schools to implement Environmental Education in the classrooms and training of trainers in Environmental Education is being conducted, and a Botswana Environmental Education Network has been established. The primary purpose of Environmental Education in Botswana was and still is to develop a concern for the preservation of the environment through

sound management activities which assumes that such concerns are acquired through engaging children in such activities specifically, school waste management activities that are considered pro-environmental (Stevenson, 2007). Silo and Mswela argue that there has been an increased interest in the rights and abilities of children to actively participate in their own learning in the field of Environmental Education and the focus has mainly been on teaching children to participate in understanding and addressing environmental issues through developing their active competence for example, their abilities to make decisions and act more independently or collectively. In Botswana, however, Environmental Education has been more emphasised and implemented in Formal education. It is not known as to how other members of the society away from formal education are learning about environmental issues, implying that knowledge on Environmental Education in other citizens within their country is very little.

The Government of the Republic of Botswana through the Ministry of Health has made major efforts in health promotion in the country. In 2010, Botswana's MoH formulated the Integrated Health Service Plan (IHSP) which is the strategy that presents the vision for the improvement of the health status and health care of the population in the Republic of Botswana up to 2020. It identified priority areas and aims to ensure that those health services that are being delivered would provide the highest possible benefits for all citizens. It also has a vision of an enabling environment whereby all people living in Botswana have the opportunity to achieve and maintain the highest level of health and well-being (Government of Botswana, 2010). As this was not enough, Botswana's National Health Policy of 2011 which bears the slogan of 'Towards a Healthier Botswana' has also put more emphasis on health promotion, indicating that the provision of health services is not just mere curing the sick but also to promoting healthy lifestyle in order to prevent diseases or ill conditions for all people living in Botswana. It has recognised that several lifestyles factors have major impact on morbidity and mortality and has realised that the key approach for reduction of morbidity and mortality would be to change harmful lifestyles through targeted and intensive health promotion, increase access to affordable healthy food and promote healthy eating habits and increased physical activity in order to reduce malnutrition as well as preventing non-communicable diseases (Government of Botswana, 2011). Regardless of the policies put in place to have a healthy people in Botswana, the disease burden is still escalating. Little is known that most of the diseases are from the environment in which people live, play and work. Therefore, without people having the knowledge on how an

environment can have an impact on health, then some diseases that can be prevented shall still escalate. The education on how people should take care of themselves and the environment for disease prevention and health promotion seems to be very little in Botswana, therefore, Botswana's MoH needed to have environmentalists in their department who should have the responsibility for the provision of education on health living styles to the community and how to prevent diseases from the source.

In Nigeria just like most countries in Africa and beyond, Environmental Education has been infused in the major subjects of the education system and the ultimate goal of the Environmental Education curriculum is anchored on four themes which include ecological foundation, human environment and development, environmental change and impact and sustainable development (Okukpon, 2008). However, Nigeria is not exempted from environmental crisis and the effects faced in the world today. The country is already experiencing a high population density as the population is more than 120 million, yielding an average density of more than 120 persons per square kilometer (Omofonmwan&Osa-Edol, 2008). Therefore, the interaction of these multitude of persons in the society leaves extraordinary mark on the environmental landscape in the country especially through the manifestation of some anti-environmental acts such as bush burning, land degradation, indiscriminate dumping of refuse, unplanned urban development, deforestation, gas flaring, creation of noise, overexploitation of natural resources and amongst others are prevalent in the country. Hence, various strategies had been proposed and implemented by the Nigerian government to curb these environmental crises and some of the strategies include abatement measure, environmental legislation, environmental policies, afforestation, establishing the environmental sanitation day exercise and provision of task force on environmental sanitation in some states (Jekayinfa& Yusuf, 2008). Although these efforts have been effective in curbing some of these environmental issues, new problems are emanating due to the fact that the basis of these problems have not been resolved. According to Thathog (2012), most of these strategies focus on “end of the pipe line” control and treatment rather than prevention and thus have been unable to produce desirable results. In this regard, these environmental crises require more focus on preventing and resolving the issues from the root. Therefore, this means that the source of these crises in Nigeria is based on the knowledge, attitude and behavior of the general public towards the environment. Thus in resolving such problems, special attention must be placed on increasing knowledge of the populace and thereby

creating a positive attitude and behavior toward the environment. Therefore, Environmental Education has a significant role to play in creating such knowledge and positive attitude and behavior about environment among the individuals in the society.

Nigeria is still very much at its infancy when we talk about health promotion and tackling the social and economic determinants of health. This is because of the rigid traditional western concept of health which is based entirely on diseases and has done little to reduce the burden of diseases. Moreover, the increasing rise in the prevalence of non-communicable diseases (NCDs) has continued unabated in Nigeria and in other regions of the world, Zambia inclusive; as NCDs have constituted about 24 percent of deaths in Nigeria (Abdalla&Aboyans, 2012). Therefore, the Nigerian government has embarked on health education, nutritional intervention, lifestyle and behavioral changes in addition to environmental modifications and involving the community in health care decision making as some of the strategies which can help prevent and control the burden of diseases through addressing the risk factors and determinants. Besides, if cultural norms and practices that put health at risk especially in rural areas must be abolished, then health promotion is likely the best approach to re-educate the public in to developing a new knowledge and skill set for health and well-being (Ekenechukwu, 2016). This simply means that the Nigerian government through the Ministry of Health has to take a lot of awareness creation on the benefits of health promotion.

2.4 Environmental Education and Health Promotion: Zambian Perspective

The Zambian government formulated the National Policy on Environment (GRZ, 2007). The aim of this policy is to ensure sound environmental management within a framework of sustainable development in Zambia. In furtherance of the aim of the National Policy on Environment (NPE), the same policy has promulgated that “Environmental Education and awareness need to be promoted through formal and non-formal education channels by all government institutions, NGOs and the private sector” (GRZ, 2007:23). In addition, the Zambian government enacted an Act of Parliament in order to facilitate the smooth implementation of Environmental Management and Environmental Education in Zambia. The Act is called Environmental Management Act No. 12 of 2011. This Act states that, subject to the constitution, every person living in Zambia has the right to clean, safe and healthy environment. Therefore, in order to

assure this right, the Ministry of Health through its establishment, institutions and structures was required by the said Act to prepare and implement an Environmental Management Strategy (EMS). Besides that, the Zambia's MoH developed the National Health Strategic Plan of 2017-2021 which focused on building robust and resilient health systems. The plan focused on delivering quality health services across the continuum of care which includes promotive, preventive, curative, rehabilitative and palliative care, provided as close to the family setting as possible (Government of the Republic of Zambia (GRZ), 2017). The strategic plan was developed in line with the National Transformative Agenda with its overall goal to improve the health status of people in Zambia in order to contribute to increased productivity and socio-economic development.

In as much as the Ministry of Health in Zambia has formulated policies and strategies of health promotion, much has been on the curative measures instead of preventive measures. This is because the Ministry of Health has overlooked the importance of Environmental Education and lacks qualified Environmental Educators that can formulate environmental policies, design community based programmes, educators that have skills and Knowledge in nutrition and hygiene, and that can assist the Ministry to monitor and evaluate projects in the Ministry.

Therefore, this study was aimed at the Ministry of Health to incorporate Environmental Education in its industry. EE would be there to instill public awareness and education on having a safe environment because all diseases come from the environment, whether airborne, waterborne, hereditary or otherwise.

2.5 Emergence of EE for Health Promotion in the MoH in Zambia

EE for health promotion is one of the latest iterations of a long history of education concerning the relationship between man and environment. The linkages between health and the environment are definitely very strong. The burden of most diseases is linked to the environment, therefore, if those hazards are attacked and cleaned up from the environment, then that would have a very positive impact on our health. Education is among the many determinants of health and development. Education equips people with knowledge and skills for problem solving, ability to access and understand information on healthcare, and potential harmful effects on public health (GRZ, 2012).

The term health promotion has been defined in myriad ways. Tones (1985) defined health promotion as “any intervention designed to foster health.” Pender, et al (2002) defined health promotion as “increasing the level of well-being and self-actualisation of a given individual or group.” Others have defined health promotion as lifestyle coaching designed to promote optimal health, quality of life and well-being (Saylor, 2004). Health promotion includes health education, identification and reduction of health risks for selected individuals and populations, empowerment, advocacy, preventative health care, and health policy development. EE would be of value in research and in health promotion with specific focus on hygiene and sanitation. It should be in the MoH so that we would have a well-informed community on how we should have a healthy and clean Zambia. Most of the global diseases and Zambia in particular are caused by environmental factors that could in fact be changed. The environment influences our health through the air we breathe, the water we drink, radiation and noise, the work environment, the built environment, and also the climate and ecosystem. The environment affects practically all parts of our body or system, and that health can be greatly improved by a healthier environment. All environmental factors could be prevented, rather than waiting for diseases to happen and treating afterwards. EE helps in identifying relation between environment and health. It helps to adopt measures to be safe from environment induced diseases.

2.6 Summary

This chapter presented literature on policies on environmental awareness and how it could help promote health in Zambia and outside Zambia. However, the literature available is more on how EE can be used as a tool to address environmental issues and how it can be incorporated into the education sector in order to promote environmental awareness. There was no literature that pointed out the importance of incorporating EE in the MoH and the role it could play in the ministry, hence this study. Assuring citizens of Zambia of their inalienable right to clean, safe and healthy environment devoid of diseases was a core job description of Environmental Educators. This is because the field of Environmental Education is centrally all about studying, teaching and learning how to care for the health of the earth, other people and ourselves. The well-being of the environment (earth), other people and ourselves is inextricably connected with each other. EE facilitates such studying, teaching and learning through institutions such as the MoH in this regard. Societies have entrusted their faith in institution.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Overview

Methodology is the method or organising principle that underlines a particular art, science or other areas of study. Therefore, the methodology of how the study was conducted is outlined in this chapter. It first begins by explaining the description of the study area and thereafter, it discusses the paradigmatic framework used in this study (ontology and epistemological assumptions). It shall also explain the research design, target population, sample design and the techniques that were used to collect data, and data validation method. In addition, methods of how data was analysed, ethical considerations and study limitations are indicated.

3.2 Description of the Study Area

Lusaka province is one of the ten provinces in Zambia. The provincial capital is Lusaka, which is also the national capital. In terms of population, Lusaka was the most populated and most densely populated with a population of 2,191,225 and density of 100 persons per km² as of 2010 (Central Statistics Office (CSO), 2012). It is the most urban province with most number of doctors and least number of Malaria related incidents. The province has eight districts namely, Chongwe, Kafue, Luangwa, Lusaka, Rufunsa, Shibuyunji, Chilanga and Chirundu. The province is bordered along Zimbabwe and separated by the lower Zambezi National Park in the South, Central province in the North, Southern province in the Southwest and Eastern province in the North East (Zambia Tourism Board, 2011).

Lusaka province was chosen to represent other provinces in Zambia because that is where the key informants of the Ministry of Health are found (specifically Lusaka district) who happen to be decision makers of the ministry. Moreover, it was cost effective for the researcher to visit selected health institutions both public, private and other stakeholders in the Ministry of Health because it was the researcher's place of residence.

3.3 Paradigmatic Framework

This research was guided by the interpretivist paradigm. According to Hammersley (2000), the most influential in the mid twentieth century regarding the interpretivist paradigm approach was

Wilhelm Dilthey. He highlighted that the subject matter investigated by the natural science is different from the social sciences, where human beings as opposed to inanimate objects can interpret the environment and themselves. Conquering with Wilhelm, human beings unlike inanimate objects are interpreters and evaluators of the environment around them. It is in this light that the researcher intended to interview the professional providers of health care as well as the potential users of health care services to gather information knowing that human beings are rational and would be able to express themselves regarding the research topic.

In the ontological assumption of the interpretivist paradigm, reality is ‘not out’ there but exists in the human mind and is conditional upon human experiences and interpretations. Reality is socially constructed under constant internal influences and can have varied meanings. This means that reality cannot be found anywhere in the space or in the social world where human beings exist but that its custody is the human mind (Mackenzie, 2006). This is substantial to the researcher in that the issue of wasting time in things that will not give knowledge is eliminated and the concentration being left out on human beings as they are the only generators of knowledge.

In the epistemological sense, the bed-lock is subjectivity in that knowledge is socially constructed (Knipe, 2006). Knowledge is both socially constructed and influenced by power relations from within society. With that understanding, the researcher realised that all participants had their own unique interpretations of the world or construction of the situation to the research. In this research, knowledge was constructed through the interactions between the researcher and qualified health care providers and potential users of health care services in districts of Lusaka province. The researcher was open to the attitudes and values of the participants or, more actively, suspend prior cultural assumptions. In other words, each human being is unique meaning their thinking and perceptions tend to be different from one another. Therefore, the researcher was very careful to consider multiple realities (all the answers that were emanating from the participants).

3.4 Research Design

The study was predominantly guided by qualitative research approach in context of hermeneutics and descriptive survey. Hermeneutics research enables the researcher to make interpretations and

gain an in-depth understanding of the researched phenomenon. Hermeneutics research emphasises subjective interpretations in the research of meanings of texts, art, culture, social phenomena and thinking (Hunter, 2004). Descriptive survey involves acquiring information about one or more groups of people, perhaps about their characteristics, opinions, attitudes or previous experiences by asking them questions and tabulating their answers. The ultimate goal is to learn about a large population by surveying a sample of that population (Kothari, 2010). Kirk and Miller (1986) noted that a qualitative research is a particular tradition in social sciences which depends on watching people in their own territory. Therefore, qualitative research approach was chosen because it is interpretive, pragmatic and grounded in the lived experiences of people. Qualitative research raises questions about the nature of humans and questions social policies that enhance the well-being of humans (Higgs, 1999). This means it deals with issues of feelings and emotions of people. In addition, a qualitative research approach was used to best understand how the Ministry of Health perceived Environmental Education and the role it could play in the ministry.

3.5 Target Population

A study or target population is an aggregate or totality of all subjects, objects or members that conform to a designed set of specification (Polit and Hungler, 1995). For this research to be generally valid, two sets of population were identified as a source of information. The researcher targeted the professional providers of health care, stratified by qualification as MoH officials, medical doctors, medical assistants, nurses and other health care providers from selected districts of Lusaka province (Lusaka, Chongwe and Chilanga districts) as well as potential users (general public) of health care services in Zambia. The health personnel targeted ranged from different levels of health care that is from health clinics to 3rd level hospitals.

3.6 Sampling Technique

This study used non-probability sampling technique and particularly expert and homogenous purposive sampling techniques. This is the sampling where the subjects are selected subjectively to represent as accurately as possible the characteristics of the population of interest (Blackwell, 1991). Expert purposive sampling technique was used to sample key informants of health care providers stratified as health directors, doctors, nurses and other health care providers such as

Environmental Health Technologists and Health Promoters from the department of Health Promotion, Environment and Social Determinants of Health. The general public were sampled using homogeneous sampling technique. This allowed the participants to speak more openly which made conversations more free-flowing. Liamputtong (2011) suggested that, “sharing social, cultural background and age is particularly when considering sensitive issues”. Hence the researcher chose to employ this type of purposive sampling technique because it comprised of different participants’ perceptions on the role that environmental education could play in the Ministry of Health.

3.7 Sample Size

The sample size consisted of 40 participants from the respective health institutions of which 5 were key informants from the Ministry of Health, 20 were health care providers and 15 potential users of health care services. That allowed the researcher to gather wide views of health providers and potential users’ perception on the role that Environmental Education could play in the agenda of Zambia’s Ministry of Health.

3.8 Primary Data and their Methods and Tools of Collection

Primary data refers to the first-hand information collected from the field. The methods used in collecting information were semi structured interviews and observation check list. Primary data is best used for ever evolving research because different factors play roles in things being researched and can lead to varying results depending on the factor and how much of a role it plays in research.

Semi-structured interview schedule was used in this study because it offered the advantage of eliciting more comprehensive data along with maintaining a fairly conversational and situational interview. The additional advantage of this approach rests on its flexibility to allow questions that will emerge from the immediate context of the interview. In this regard, Kvale (1996) outlined that, the qualitative research interview is focused on certain themes in the interviewee’s life world. It is neither strictly structured with standardised questions, nor entirely non directive, but is focused on certain themes. It is then up to the subjects to bring forth the dimensions they find important within the focus area. Furthermore, semi-structured interview guide was used as it

responded to the limitations of both informal and structured interviews. The primary limitation of an informal interview is that interviews with different people are not comparable and the data are not generalised. While in structure interview, there is diminished opportunity to pursue unexpected findings or discoveries. The guided interview would follow an outline of questions, but not all the prescribed probes, transitions and follow-ups would be established prior to the interview. The interviewers would be free to deviate from the interview questions as it would be needed to pursue serendipitous findings and fruitful directions (Pedroni& Pimple, 2001).

Qualitative observation involves watching and recording what people say and do. As it is impossible to record everything, this process is inevitably selective and realise heavily on the researcher to act as the research instrument and document the world he or she observes (Mays & Pope, 1995). The data collected through observations consists of detailed descriptions of people's activities, behaviors, actions, and the full range of interpersonal interactions and organisational processes that are part of observable human experience (Patton, 1990). Therefore, the researcher's role would range from overt to covert, or it may assume the identity of observer, semi-participant and participant observer.

The reason for using this method of data collection is embedded on its advantage which is its viability in providing information that the respondent is not going to talk about during an interview, may be because they would be taken so much for granted that the participant may think they would not be important or interesting, or because something is sensitive and therefore, difficult to discuss, or otherwise.

3.9 Secondary Data and their Methods and Tools of Collection

Secondary data is comprised of already published material and journals, books, the internet and other published books. Secondary data was used to complement primary data that was collected so as to be in line with what others have done before.

Secondary data was important to this study because it provided the starting point for understanding the topic at hand. Secondary data helped the researcher to find out what has actually been done and what yet remained to be done on this particular issue. Therefore, the researcher took keen interest in analysing already existing literature (document analysis).

Existing literature helped the researcher to carry out a comparative analysis of its findings and already existing truth.

3.10 Methods of Data Validation and Trustworthiness

This research study used triangulation data validation technique. There are different types of triangulation techniques but for this research, methodological mirror triangulation was used to ensure that the data collected was correctly validated. According to Gliner (1994), triangulation is a method of highest priority in determining internal validity in qualitative research. The term triangulation stands for the procedure that entails carrying out three measurements to determine the exact position of a point in the landscape. Methodological triangulation technique in this research was used because it involves the use of multiple qualitative and or quantitative methods. Kopinak (1991), defines multi-method triangulation as “gathering information pertaining to the same phenomenon through more than one method, primarily in order to determine if there is a convergence and hence, increased validity in research findings.” Konipak, further, indicates that the use of more instruments would provide for more detailed and multi-layered information about the phenomenon under study.

Since the research approach used was qualitative, the researcher used semi-structured interviews, observations and document analysis to determine the role of Environmental Education in the transformative agenda of Zambia's Ministry of Health. It was anticipated that the findings from all of the methods would draw the same or similar conclusions, and then validity would be established. Therefore, multi-method triangulation was appropriate in the research as it developed a strategy for combining the data collected with different data collection instruments. While this method is popular, it generally requires more resources. Likewise, it required more time to analyse the information yielded by the different methods. Therefore, more time and resources were allocated to this research.

3.11 Data Analysis

This study employed thematic analysis which is a type of qualitative analysis. It is used to analyse classifications and present themes (patterns) that relate to the data. It illustrates the data in great detail and deals with diverse subjects via interpretations (Boyatzis, 1998). Thematic

analysis is considered the most appropriate for any study that seeks to discover using interpretations. It provides a systematic element to data analysis. It has the capability to allow the researcher associate an analysis of the frequency of a theme with one of the whole content. This will confer accuracy and intricacy and enhance the research's whole meaning. Qualitative research requires understanding and collecting diverse aspects and data. Thematic analysis gives an opportunity to understand the potential of any issue more widely (Marks & Yardley, 2004).

Data analysis and data collection were done concurrently to enable the researcher to have a deeper understanding of the issues raised in the research and an opportunity to further develop issues in interviews as data collection progressed. Key themes arising from the data were identified to help understand their patterns, classes and characteristics as the research unfolded. The emergent themes from the analysis became the foundation for clustering the data. Thematic analysis has six clearly defined steps which were used as regards the progress of organizing data (Marshall and Rossman, 1999). First the researcher had to organise data which was done at the end of data collection. This was achieved by reading through the transcripts several times in order to comprehend it and begin to reduce it into readable formats. The process of organizing data in a compact form allowed the researcher to capture all important and relevant information without only highlighting the interesting and vivid information. The second stage was to generate categories, themes and patterns which came out as a result of continued immersion in the data. The identification of the categories, themes and patterns became 'baskets' into which information was placed. The third stage was coding the data which has been described by Marshall and Rossman (1999) as "formal representation of analytical thinking". At this stage, these different categories, themes and patterns were allocated color codes that identified them for further analysis. As the process of coding continued, more relevant data was generated, as further comprehension of data was achieved. The fourth stage was testing emergent understandings in relation to the research questions which were being explored. The researcher looked out for any similar and contrasting patterns and fitted them into the general discussion as was deemed necessary. At stage five, there was searching for alternative explanations for patterns that were apparent in the research study. The researcher created an overall narrative with all the data where each theme was analysed and presented the explanation of the findings. The final and sixth stage was report writing where the researcher interpreted the information and gave meaning and shape to the whole load of information.

3.12 Ethical Considerations

Involving people as research participants carries ethical obligations to respect their autonomy, minimise their risks of harm and to treat them fairly. Therefore, an introductory letter and ethical approval reference number: HSSREC: 2018-MARCH-009 from UNZA were given to allow the researcher collect data in the field. Moreover, a consent letter from the National Health Research Authority was given to the researcher in order to be allowed to conduct a research in the Ministry of Health. The researcher had put into consideration that respect must be accorded to the views of the participants. Furthermore, anonymity and confidentiality were applied by assuring all respondents that their identities and responses would be by no means be published or disclosed. Almost all research guarantees the participants confidentiality (Trochim, 2000). Therefore, participants were assured that identifying information would not be made available to anyone who was not directly involved in the study. The stricter standard was the principle of anonymity which essentially meant that the participant would remain anonymous throughout the study.

3.13 Limitation of the Study

Although the purpose of this study endeavor was achieved, the researcher was aware that there had been some limitations. Firstly, the initial plan to visit all the eight district in Lusaka province proved futile as the researcher could not manage with the limited resources that he had and ended up visiting only three district of Lusaka province namely Lusaka district, Chongwe district and Chilanga district. This meant that not all districts in Lusaka province were interviewed; however, this was mitigated by ensuring that the selected sample was as representative as possible. Secondly, most of the participants did not want their views to be recorded for various reasons. However, the researcher was quick to take note of participants' views and could probe further where clarity was required.

CHAPTER FOUR: PRESENTATION OF FINDINGS

4.1 Overview

This chapter presents the findings on the Role of Environmental Education in the Transformative Agenda of Zambia's Ministry of Health. The chapter begins by describing the demographic characteristics of all the participants that participated in this study and will highlight participants' knowledge about environmental education. Thereafter, findings from professional providers of health and potential users of health care services in Zambia on main objectives will be presented. These findings were obtained from compiling data obtained from the field using interview guide, observations and reading through various strategic plans and policies of Zambia's MoH. The findings are categorized according to the sequence of the research objectives namely, determining environmental management strategies used by the MoH in health promotion, exploring the transformative agenda of Zambia's MoH and establishing the role that EE could play in the transformative agenda of Zambia's MoH.

4.2 Demographic Characteristics of Participants

The demographic characteristics of participants at the time of this study in the year 2019 constituted of age, gender, level of education and occupational status. The sample size of this study was 40 participants broken down as follows; five key informants, 20 professional providers of health and 15 potential users of health care services in Zambia. Of the total participants, table one shows that 17 participants were male representing 42.5 percent while female were 23 representing 57.5 percent respectively. Hence, the study reveals that the majority of participants were female.

4.2.1 Age Distribution of Participants

All the participants of this study were asked to declare the age in years as at their last birthday. It was discovered that the minimum age of male participants was in the age group of 26 to 30 and they were two representing 5 percent of the total number while the maximum age was in the age group of 46 to 50 and there was only one participant representing 2.5 percent. The minimum age of female participants was in the age group of 20 to 25 and they were also two representing 5 percent of the total number and the maximum age was in the age group of 46 to 50 with one

participant representing 2.5 percent of participants. The information on age was important to have a diversity experience of environmental education and the role it could play in health promotion. Table 4.1 shows the age distribution of participants by sex.

Table 4.1: Age Distribution of Participants by Sex

Age Group	Male		Female		Total	
	Number (n)	(%)	Number (n)	(%)	Number (n)	(%)
20-25	0	0	2	5	2	5
26-30	2	5	5	12.5	7	17.5
31-35	6	15	7	17.5	13	32.5
36-40	5	12.5	4	10	9	22.5
41-45	3	7.5	4	10	7	17.5
46-50	1	2.5	1	2.5	2	5
50+	0	0	0	0	0	0
Total	17	42.5	23	57.5	40	100

(Source: Field Data, 2019)

Table 4.1 shows that female participants were represented in all age groups while male representation started in the age group of 26 to 30, implying that male participants were not represented in the age group of 20 to 25. It further shows that females 23, representing 57.5 percent participated in the study more than males 17, representing 42.5 percent.

4.2.2 Education Level of Participants

Participants of this study had different levels of education as indicated in Table 4.2.

Table 4.2: Education Level of Participants

Level of Education	Males	Females	Total
Senior Secondary	0	1	1
Tertiary	17	22	39
Total	17	23	40

(Source: Field Data, 2019)

According to Table 4.2, one female participant did not have the chance of reaching tertiary education representing 2.5 percent of the total participants. 17 male participants, representing 42.5 percent all reached tertiary education while 22 female participants, representing 55 percent had reached tertiary education. The information collected on education was important in order to determine if there could be a significant difference in interpreting the researched issues.

Zambia's MoH Compliance to the National Policy on Environment, 2007

The National Policy on Environment (2007) has promulgated that Environmental Education and awareness needed to be promoted through formal and non-formal education channels by all institutions of the government, including the Ministry of Health. To be compliant with policy directives is a measure of good corporate citizenship and, therefore, all institutions strive for it.

Participants were asked to explain what this policy direction meant. However, 14 of the total number of participants representing 35 percent did not know what the policy directive meant while 26 of the total number of participants representing 65 percent interpreted the policy direction in their understanding to which some were common in nature. The participant from the potential users of health care described this policy direction to mean:

“Using formal structures such as schools and non-formal means for example, mass media to promote environmental awareness in institutions”.

“The policy means that Environmental Education has to be introduced and promoted in school's curriculum, and under non-formal, Environmental Education information must be displayed on posters and flyers”.

The participants from the providers of health care when asked what the policy direction meant, below is what was said:

“This means that all government institutions should be able to educate the public on environmental issues be it in a formal way for example, in a classroom or in a non-formal way for example through door to door education, and in public places”.

“It means that both government and non-government organizations, civil societies and communities should be aware of the relationship between the economic activities and social activities with the environment”.

“It means that all educated and uneducated citizens in the country should receive health or environmental notifications in any way possible. Every citizen has got a right to information”.

4.3 Environmental Education Activities in the Ministry of Health

For participants to understand the background of the study, the researcher began by asking the participants if they had ever heard of Environmental Education. In order to clarify matters, the researcher reminded participants that Environmental Education was different from health education and environmental health but was all about using education to care for and address health issues of individuals, society and the environment. In this regard, participants were asked to state whether or not they had heard of Environmental Education before. Their responses appear in Table 4.3:

Table 4.3: Participants’ Awareness of Environmental Education

Have you Heard of Environmental Education Before?	Number (n)	(%)
Yes	34	85
No	06	15
No Response	0	0
Total	40	100

(Source: Field Data, 2019)

Table 4.3 above shows that the majority of the participants, 34 representing 85 percent were familiar with Environmental Education and only six participants, representing 15 percent had not heard about it before.

In order to put much focus on the work of the MoH, participants were asked to state whether or not, in their opinion, the MoH at whatever level familiar to them implemented Environmental Education. Their responses to this question are captured in Table 4.4:

Table 4.4: Status of Implementing Environmental Education in the Zambian Ministry of Health

Does the MoH Implement Environmental Education?	Number (n)	(%)
Yes	33	82.5
No	7	17.5
No Response		
Total	40	100

(Source: Field Data, 2019)

Table 4.4 above shows that the majority of the participants, 33, representing 82.5 percent knew that the MoH implemented Environmental Education within its structures while seven participants, representing 17.5 percent of the participants stated that the MoH did not implement Environmental Education.

Nature of Environmental Education Activities Provided by the Ministry of Health

Participants who stated that the Ministry of Health implemented Environmental Education were further asked to describe the nature of Environmental Education provided. Their responses are presented below in bullet form using general themes.

4.3.1 Door to Door Health Education

Participants stated that door to door health sensitization administered through Environmental Health Technologists (EHTs) is one of the ways in which the Ministry of Health provided Environmental Education. The door to door health education was done to provide health care and education to the community in order to enhance the health of all the individuals in the community. One participant explained that:

“We go in the field as EHTs to do door to door health education. We educate people in the community about how to take care of themselves and the place surrounding them. We do that per household and later we call the households visited, of course, those willing to listen and emphasise on healthy living habits”.

The other participant also narrated that:

“I sometimes see people from hospitals going round the houses telling people in their homes about how to keep the environment clean. They even came at my house to tell us the same. So I feel that’s a way they do environmental education”.

4.3.2 Health Promotion Activities

Participants also stated that the MoH provides Environmental Education through health promotion activities promoted by specialists of health promotion. Some participants stated that:

“We are given Environmental Education in health facilities on how to keep our environment clean. They also inform us on how we should practice hygienic behavior which includes cleaning the environment where we live”.

“Through health promotion, we educate the community to prevent activities that may pollute the environment. For example, indiscriminate disposal of waste in the environment, discharge of sewer effluent into the environment and illegal quarrying that may create ponds which become breeding sites for mosquitoes”.

4.3.3 Television Health Programmes

Health programmes which came on television, called ‘Your Health Matters’, is a way in which the Ministry of Health provided Environmental Education to the public. Your Health Matters programme covered a number of diseases that was discussed ranging from non-communicable diseases to communicable diseases. One participant lamented that:

“I learn a lot from Your Health Matters on television. They teach us about certain diseases, how they are brought and how they can be prevented”.

4.3.4 Health Messages in the Media

Participants lamented that they receive health messages on mobile phones if there is any outbreak of a disease on how they should take care of themselves. Participants also said that there are advertisements on radio and newspapers reminding citizens to wash their hands before and after eating in order to prevent cholera, typhoid and some other communicable diseases. The MoH uses the media to make the people get aware of a lot of health issues.

4.3.5 Use of Posters, Flyers and Brochures

Health awareness was used on posters, flyers and brochures to remind the citizens about living a healthy life. Posters, flyers and brochures included a lot of health topics for example, cancer screening, ebola, managing diabetes, cholera and many more health related issues. Such posters appeared in health facilities, other government institutions, markets, restaurants, at sports recreation facilities, bars and in town centres.

4.3.6 Drama

Participants stated that health workers sometimes used drama to convey health messages to the public. Drama was used as a tool for educating the public about accessing health services and raising some of the main issues facing people. One participant narrated that:

“I watched a drama performed by health workers where I learnt the importance of boiling water or chlorinating it to avoid waterborne diseases as well as avoiding stagnant water near houses”.

Drama has been used as a medium for community action programmes such as HIV/AIDS prevention, care for patients with mental disorders and projects on women's health.

4.4 Environmental Management Strategies Used by the Ministry of Health

According to objective one, this study wanted to determine the environmental management strategies that the Zambia's MoH was using in disease prevention in the quest to promote health. The environmental management strategy describes the process for planning, communication, documentation, monitoring, evaluation, review and feedback. Therefore, it could be relevant to the MoH as it could work to improve the wellbeing of the community, encouraging active, sociable and meaningful lives to promote good health and wellbeing. It could seek to steer the development process to take advantage of opportunities, eliminating and preventing any harmful effects on the environment and community, mitigate problems and prepare people for unavoidable difficulties by improving adaptability and resilience. Participants were asked whether or not, in their view, the Ministry of Health implemented environmental management strategy. Table 4.5 shows the responses of participants.

Table 4.5: Status of Implementing Environmental Management Strategy in the Ministry of Health

Does the MoH Implement Environmental Management Strategy?	Number (n)	(%)
Yes	33	82.5
No	3	7.5
No Response	1	2.5
Don't Know	3	7.5
Total	40	100

(Source: Field Data, 2019)

According to Table 4.5, most of the participants, 33, representing 82.5 percent agreed that the MoH implemented an environmental management strategy, very few participants, three, representing 7.5 percent felt the MoH did not implement an environmental management strategy. One participant, representing 2.5 percent did not respond to the question and three participants, representing 7.5 percent did not know whether the MoH implemented an environmental strategy or not.

Nature of Environmental Management Strategies Used by the Ministry of Health

Like the case of Environmental Education reported in the preceding section, participants were asked to describe the nature of environmental management strategy implemented by the Ministry of Health. Their responses are presented below with the aid of general themes.

4.4.1 Departments of Health Promotion and Environmental Health

Participants who agreed that the MoH implemented environmental management strategy said that the Ministry had health promotion and environmental health departments where all issues pertaining to the environment were being implemented.

4.4.2 Water Quality Monitoring

In order for the people to have clean and safe water, the Environmental Health Technologists took water samples to ensure that the water was safe for the public. One participant had this to say:

“Water is one of the sources of diseases or communicable diseases. When we talk of typhoid, cholera, diarrhea and dysentery, all these come through as a result of contaminated water. So, for us to ensure where the condition is coming from, we do water quality monitoring. We are now doing this regularly even when there is no outbreak of any waterborne disease and not wait for diseases to occur. We check water samples in order to know what is happening and if there is a problem, we come up with a report and submit to the next level so that the problem is sorted out”.

The same participant was asked if they implemented that strategy because of the 2017/2018 cholera outbreak, the response was; *“no, no, these practices have been there, but now they have just been intensified”*.

4.4.3 Daily Surveillance of Diseases

The Ministry of Health conducted daily surveillance of diseases in order to try to detect where disease organisms, such as bacteria and viruses were located in order to predict and prevent human illness. One participant from professional providers of health care narrated that:

“We are working with clinical care people and Neighborhood Health Committees (NHCs) who are in the community, they live with the community, so they know the problems there and probably where the problem is coming from. Therefore, when we engage them, they tell us the area where the problem is”.

The MoH directly measured what was going on in the community through surveillance, it was useful both for measuring the need for interventions and for directly measuring the effects of intervention.

4.4.4 School Health Education

The Ministry of Health also provided school health education where they looked at a number of health issues. They ensured that schools were meeting the health standards that could prevent the occurrence of diseases in schools. When asked the kind of health services they offered in schools, the participant had this to say:

“Well, school health education encompasses all disciplines and specialists in different fields. For example, we have Oral Health Coordinators, Nutritionists, Health Promoters and Environmental Health Technologists who provide health education to learners. We go with such kind of people so that the knowledge is given from various specialists. When we go in schools, we debate on various issues of the environment because we are into preventive measures, it’s not about curative”.

In a similar way, another participant said that:

“We look at the population of the school as you know pupils come from different homes and backgrounds, so we intensify health education so that everyone has access to health information. We also monitor the condition of sanitary facilities and see if they match with the number of pupils in school. EHTs can even do the water sampling there to see if the school has safe drinking water for everyone. The nutritionists will also check for the eating places of the pupils and what type of food is given”.

4.4.5 Food Inspection

Participants stated that the MoH did food inspection. They collected food samples and ensured that the food that was served to the public was conducive for human consumption. The health workers ensured that restaurants, butcheries and bars followed the regulated health standards because a lot of diseases were going to be transmitted if they did not look at that aspect. Therefore, it was illegal for someone to sell food that was not healthy for human consumption. Nonetheless, health workers made sure that premises where food was sold were clean.

4.4.6 Stakeholder Partnership

The Ministry of Health worked with other stakeholders to help disseminate information. It worked with NGOs, Ministry of Local Government and Housing (MLGH) and other relevant organizations to promote a safe and a healthy environment. Boreholes were dug where there was scarce water, pit latrines were provided and drainages were made to avoid stagnant water. Under Disaster Management and Mitigation Unit (DMMU), they ensured that all drainage systems were unblocked and sensitized the public on how to manage disasters like disease outbreak, floods and drought. Relief services to disaster stricken areas were provided to avoid possible outbreaks of diseases. Communities were on the other hand, sensitized to keep the surroundings clean. Other stakeholders used were the media, for them to advertise health programmes on television and radio. The MLGH through the council helped in the collection of garbage from people's homes to reduce the accumulation of waste in compounds.

4.4.7 Use of Incinerators and Disinfectants

In order to address the issue of air pollution from medical waste, health facilities had put up incinerators (chimneys) as part of waste management strategy. On disinfection, which is the process of eradicating pathogens on the environmental surfaces, water, reusable medical services and other inanimate objects, health facilities used chlorine to remove dried organisms from the surfaces. Jick was used for cleaning blood stains and beddings. Chlorine was also distributed in the community to be used in drinking water to kill micro-organisms found in water.

4.4.8 Community Outreach

The staff of the Ministry of Health went for community outreaches and did drama performances, sensitizing or educating the community about causes and preventive measures of typhoid, cholera and general cleanliness like washing of fruits and vegetables. They also sprayed homes and houses to render them free from mosquitoes.

4.4.8.1 Challenges Faced in the Implementation of Environmental Management Strategies

Like any other case, professional providers of health were asked to state whether or not they faced challenges in implementing environmental management strategies. To which every participant accepted challenges were there and their responses are presented below in bullet form with the aid of general themes.

i. Lack of Compliance to Environmental Health Standards

There was lack of compliance in most health facilities, schools, tertiary learning institutions and some public places to environmental health standards as enshrined in the public health regulations pertaining to sanitary facilities, solid waste disposal, drainage, overcrowding, lighting and ventilation which became a source of public health hazard. One participant had this to say on lack of compliance:

“There are times when we visit some mines and just to find that workers are working without protective clothing. The exposure to such chemicals has varying toxicity levels and affects the health of a person. But we have always told them to consider safety precautions at work”.

There was also poor coordination with some agencies that had the responsibility for protecting and promoting environmental health.

ii. Inadequate Financial and Material Resources

As in the case of other institutions, lack of adequate funding and logistics to the health sector was hindering the implementation of environmental health related programmes. Some places were too far such that health workers were unable to do contact training as a result there were outbreaks of typhoid and other diarrhoeal diseases. However, though that was a challenge, health workers made sure they used other means to reach out to the community. As one participant narrated that:

“Sometimes we think outside the box as EHTs. We sacrifice and make sure we reach the community. We can’t just sit down and say, ok, there is a problem in that area so we are going to sit, what we don’t want is for the epidemic to get out of hand because it is going to affect a lot of people. Prevention is better than cure; it is even cheaper to prevent diseases than buying medicines. So we walk with sprayers on our back into the communities and not wait for a vehicle which is not there. By so doing, we are saving many lives”.

Other participants who were newly deployed also lacked identity cards making their work difficult in the community as it was difficult for them to be recognized they were from the health sector.

iii. Social-Cultural Attributes

There were some social, cultural and religious beliefs and practices that negatively affected the operations of environmental health officers. These included practices such as sexual cleansing of surviving spouses which at times led to the transmission of HIV, unsafe traditional male circumcision procedures and early marriages for the girl child which sometimes brought complications when giving birth. One EHT said:

“Aba bantubalatutamfya (these people chase us) when we visit their home places because they already have what they believe in and changing their beliefs is not an easy task, but we try”.

iv. Lack of Employment and Low Level Literacy on Some Community Members

Lack of employment by some of the community members became a challenge. The Zambian nation had a high level of unemployment, meaning many people were not in gainful employment, making them vulnerable to illness and thereby imposing a heavy burden on the health delivery system. Unemployment led to poverty because there was no income. Therefore, some of the unemployed members of the community were expectant of some money for them to listen to health workers who went in the field for health matters. Besides, health providers had challenges with some community members that had low literacy levels. There used to be some misunderstandings when EHTs used complicated terms to explain health issues. Moreover, the illiterate always thought the health workers were wasting their time because of lack of proper understanding of what they were being told in relation to health promotion and some could even say traditional way of handling some health issues were better as compared to the clinical way. To the contrary, one participant had this to say:

“People with higher levels of education are less likely to engage in risky behaviors, such as smoking and drinking, and are more likely to have healthy behaviors related to diet and exercise”.

Additional Comments made by Participants on EMS used by the MoH

This section requested participants to state any addition views, suggestions or opinions concerning environmental management strategies. Their statements are presented in bullet form. However, some points covered in the previous sections may appear in this section for the sake of emphasis and reinforcement.

- i. To effectively implement environmental management strategies, there is need for support in terms of logistics.
- ii. Zambians need to be fully incorporated in environmental management strategies and policy planning.
- iii. To empower and support Environmental Health Technologists especially in transport and other logistics in order to realise the efforts put in.
- iv. To work hand in hand with other stakeholders to effectively implement environmental management strategies.

- v. Let environmental management strategies be shared with different communities so that people begin to appreciate the effort being done by the Ministry of Health which is aimed at uplifting the living standards of people.
- vi. Environmental management strategy is the key to a healthy public. It is a foresight for a healthy environment and a healthy public both at present and the future. The strategy is the pillar of the MoH as it provides a framework that is concerned with the health rights of the public.
- vii. Implementation of environmental management strategies within the MoH would be enhanced if communities are actively involved.
- viii. All members of staff working in the Ministry of Health should be trained in the basics of environmental management strategy.
- ix. Environmental management strategy is there in the MoH but with too many gaps left.
- x. An environmental management strategy is very vital in the sense that it is like a guide for the public that will enable them to live healthy, be alert always and aware of their actions which might bring serious problems to the environment. It would enable the Ministry set targets, values and goals for the environment in totality.
- xi. The MoH should come up with interesting activities under the environmental management strategy that will interest the community to participate in the keeping of our country clean.
- xii. There is need to purchase more vehicles to help in garbage collection in communities.

4.5 New Paradigm of Zambia's Ministry of Health

In an attempt to promote health in Zambia, the Zambia's MoH took a recognizance of the fact that all determinants of health must be taken into account when dealing with disease prevention and control. The MoH recognized that biomedical interventions alone could not guarantee better health because health was heavily influenced by factors outside the health sector domain, especially social, economic and political forces. These forces largely shape the circumstances in which people grow, live, work and age as well as the systems put in place to deal with health

needs ultimately leading to inequities in health between and within counties. Therefore, the attainment of the highest possible standard of health depended on a comprehensive, holistic approach which went beyond the traditional curative care, involving communities, health providers and other stakeholders. In view of this, the Zambia's MoH as part of its transformational agenda had undergone yet another reform in its bid to improve health at all levels. This section of objective two presents the reforms that had taken place in the MoH in the bid to promote health in the country. The participants' responses are presented below in general themes.

4.5.1 Creation of Health Promotion, Environment and Social Determinants of Health Department

Participants stated that the MoH created in its structure the department of Health Promotion, Environment and Social Determinants of Health mandated to promote health, disease prevention and control, treatment and rehabilitation. The MoH's top priority was to ensuring that the Zambian people did not fall sick easily and those that slipped through the cracks were treated and rehabilitated accordingly. To understand more about the functions of this department, one participant said that:

“This department has a lot of work on its head to make sure that we have a healthy living people, and to achieve that, we work hand in hand with other health departments like the clinical care and public health, and some other stakeholders. The department looks into coordinating environmental health, occupational health and food safety, promotion of good health and disease prevention”.

Another participant had this to say:

“The Ministry of Health created the directorate of health promotion, environment and social determinants of health that would try by all means to prevent the outbreak of diseases and promote health through the provision of health education to the community. It is also mandated to foster intersectoral collaboration within the framework of whole government and whole society, buying into the principles of health in all policies”.

The interventions formulated by the department of Health Promotion, Environment and Social Determinants of Health targeted the households in the community in order to reduce the incidence and prevalence of communicable and non-communicable diseases.

4.5.2 Keep Zambia Clean, Green and Healthy Programme

The MoH joined the call to keep Zambia clean, Green and Healthy Programme which was re-launched by His Excellency, President Edgar, C. Lungu on 28th April, 2018, a provision that every last weekend of each month was going to be a day for all Zambians to participate in keeping Zambia Clean, Green and Healthy. The first launch of the programme (Keep Zambia Clean and Healthy) was in June, 2007 launched by the late President of Zambia Levy, P. Mwanawasa. The Keep Zambia Clean, Green and Healthy Programme was in response to environmental concern such as waste management, sanitation, hygiene and the necessity for clean and healthy environment. The programme was aimed at resuscitating the towns and villages by raising awareness on the effects of a clean environment on human health. It called for all citizens to participate in cleaning the environment including bodily cleanliness, plant trees, flowers and taking care of the landscape in order to stay healthy. It was for this reason that the MoH embarked on an ambitious transformational agenda of playing a stewardship role to coordinate coherently the players who managed health determinants so that it could shift the interface with which the public had with the health sector from the hospital bed to those who managed health determinants, those who managed water and sanitation, education, infrastructure, agriculture and nutrition. Furthermore, the MoH practiced the Keep Zambia Clean, Green and Healthy in their workplaces every last Friday of each month before joining the general public on last weekend of each month. One participant had the following to say in support of the Keep Zambia Clean, Green and Healthy Programme:

“We are taking this programme very serious. It’s everyone’s responsibility, health begins with an individual. Hence, as a district, we are doing this programme every last Friday of each month. We do the cleaning of our surrounding, conduct the BP check up and thereafter, we go for physical activities. We perform physical activities so that we have a physically fit and productive workforce”.

As evidenced in Figure 4.2, some hospitals had shown a positive change in ensuring their environments were clean, green and healthy.



Figure 4.2: Keeping the environment clean, green and healthy

(Source: Field Data, 2019)

4.5.3 HIV Testing, Counseling and Treatment

Voluntary Counseling and Testing (VCT) was an important tool for preventing the spread of HIV especially in communities with generalized epidemics. It allowed individuals to know their status and to evaluate their behavior and its consequences. A negative test result offered a key opportunity to reinforce the importance of safe and risk reducing behaviors. A positive test result would also allow individuals to receive referrals for counseling, care and support, including opportunities to talk to knowledgeable people who could help them understand what their HIV status meant and what responsibilities they had to themselves and others.

On 15th August, 2017, President Edgar, C. Lungu launched the HIV Testing, Counseling and Treatment (HTCT) which substituted the National Voluntary HIV Counseling and Testing

(VCT). The shift from VCT to HTCT prioritized HIV testing and commencement and retention on Anti-Retroviral treatment of all Zambians living with HIV. The theme for the inaugural HTCT Day was; ‘HIV Test and Treat: Towards Ending AIDS’. Therefore, the MoH made a major shift from the policy pronouncement made by President Edgar, C. Lungu. The immediate initiation to treatment of all persons infected by HIV was aimed at enabling Zambia achieve its goal of ending AIDS by 2030 through what was called a 90, 90, 90 global fast track campaign of ensuring that 90 per cent of persons living with HIV know their HIV status, 90 percent of those who know their HIV status are put on Anti-Retroviral Therapy (ART) and 90 percent of people on ART achieve viral suppression.

The researcher asked if there were major changes in the way HTCT was being administered as compared to the way VCT was administered. The response from the participant was:

“There has not been any change on HIV testing, the same approach has continued. What we are just implementing is routine testing as part of diagnostic screening. What happens is that, when a person visits any health facility, the health care provider has to off course counsel the person and based on the symptoms, the person will be advised to undergo an HIV test as a routine. In all HIV testing, full consent of the patient must be obtained and the patient has the right to opt out if he or she doesn’t want to be tested for HIV in line with global standards and medical ethics”.

HIV Self Testing (HIVST)

The MoH had introduced HIVST as a new approach to increase HIV testing uptake. One participant had this to say on HIVST:

“Most people don’t like visiting the health facilities for HIV testing for reasons best known to themselves. Hence, as a ministry, we have introduced people to HIVST which is an approach that can address multiple barriers associated with HIV testing”. When probed on whether HIVST was a good practice or not, the response was, “HIVST is a promising approach, people are able to test themselves for HIV privately and at their own convenience. There is no one

during self testing who is going to know the results apart from yourself and a decision on how to stay healthy will be made from there”.

4.5.4 Upgrade of Clinics to First Level Hospitals

The upgrading of the clinics to first level hospitals was government’s commitment to taking quality health care services as close to the families as possible. This type of reforms had seen the reduction in the number of referral cases to second and third level hospitals. Participants were asked to state the benefits that the upgraded clinics brought to them and the community at large. The following were their responses:

“We have seen a lot of benefits; we have seen more staff being recruited to man various hospital units, equipped with modern facilities and most importantly stocked with enough essential drugs. It was very disheartening to hear of patients being sent away with prescriptions to buy drugs because the health facility didn’t have, or they could not be attended to because there was no doctor or clinical officer”.

The upgrade of clinics led to an increase in the number of patients to the hospital. This was understandably relevant since the facility was upgraded to a first level hospital and was responsible for providing health services to a wider geographical area. One participant said:

“A lot of people from surrounding communities are now coming to us for care. We were formally providing health services to a small number of patients but now our clients come from other communities as well to seek medical attention”.

One potential user of health care services also said:

“I must thank this government for upgrading Kanyama to a first level hospital because there were some cases that were referred to UTH (University Teaching Hospital) that are now handled here because of the experts that have come. This hospital is now able to conduct surgical operations and some other services that were not done before”.

However, in as much as the upgrade of clinics to first level hospitals was good to some people, some participants complained of having more pressure on them to deliver health care to more patients than before. One had this to say:

“There is a shortage of nurses here, we are understaffed, our clients have increased and the diseases we treat have also increased. I now attend to more patients in a day than before. So I have to manage my time well. This means a little less time with each patient than before”.

Another one said:

“I feel I have to do more work now than I used to do. The reason is simple, the number of patients I used to attend to has now increased”.

4.5.5 National Malaria Elimination Strategic Plan 2017-2021

Zambia’s efforts to reduce the malaria burden and address other health challenges were part of a broader agenda aimed at achieving significant and sustainable socioeconomic development. Therefore, the MoH was committed to move from accelerated burden reduction of malaria to malaria elimination in Zambia. Hence, the MoH came up with a strategic plan called National Malaria Elimination Strategic Plan 2017-2021. The strategic plan aimed at eliminating malaria infection and disease in Zambia by 2021 and to maintain malaria free status and prevent reintroduction and importation of malaria into areas where the disease had been eliminated. One participant had this to say on National Malaria Elimination Strategic Plan 2017-2021 in regards to the intervention methods put in place to achieve that:

“We have set interventions to try and attain that. We are doing IRS which is Indoor Residual Spraying, distribution of long lasting insecticide treated mosquito nets, intermittent preventive treatment during pregnancy. We are also doing mass drug administration and community engagement in the fight against malaria in our country”.

Additional Comments by Participants on the New Paradigm of Zambia’s Ministry of Health

- i. The MoH should include environmental education in its transformative agenda to help a lot of people to be aware of environmental issues and know how to make their environment safe and conducive for their health.
- ii. The MoH should employ environmental education experts that would carry out different methods of changing people’s mindsets and attitudes towards mainstreaming a health and safe environment through extensive education of communities and through sensitization and awareness.
- iii. The MoH should also put more emphasis on global warming and improving sanitation in the country, the latter in relation to “Keep Zambia Clean, Green and Health Programmes”. The strategy needs to balance between clinics and infection prevention as well as talking about garbage collection, unblocking drainages and other environmental factors.
- iv. The MoH is trying its level best to improve the health of all Zambians looking at some activities being done to promote health.
- v. The department of Health Promotion, Environment and Social Determinants of Health must work tirelessly for them to achieve the department’s intended goal.
- vi. The MoH should sensitise people on what they should be doing in an effort to eliminate malaria in the country.

4.6 Potential Role of Environmental Education in the MoH’s Agenda

This section presents findings on objective three which sought to establish the role of environmental education in the transformative agenda of Zambia’s Ministry of Health. If participants were familiar with environmental education and its role, they were asked if, in their view, the MoH needed to incorporate environmental education in its transformative agenda within its establishment and structures. Their responses are featured in Table 4.6.

Table 4.6: Views on Incorporating Environmental Education in the Ministry of Health.

Does the MoH need to Incorporate Environmental Education in its Establishment and Structures?	Number (n)	(%)
Yes	34	85
No	5	12.5
Does Not Know	1	2.5
Totals	40	100

(Source: Field Data, 2019)

Based on table 4.6 above, an overwhelming majority of participants, 34, representing 85 percent felt that the Ministry of Health needed to incorporate environmental education in its establishment and structures. Five participants, representing 12.5 percent felt environmental education was not necessary in the MoH and one participant, representing 2.5 percent did not know whether environmental education should be incorporated in the transformative agenda of Zambia's Ministry of Health or not.

Participants that felt that environmental education should be incorporated in the transformative of Zambia's Ministry of Health were further asked to explain the role that environmental education would play in the Ministry of Health. Their responses are presented below.

4.6.1 Changing People's Mindset and Attitudes to Health

Environmental education could play a role of transforming the mindset and attitude of people in the community towards environmentally healthy behavior. One participant had this to say:

"The Ministry of Health must just incorporate environmental education because the education that will be given to the members of the public will help to change the mindset of people. It is difficult for some people to change on their own but through education".

Other participants also had the following views on the role that environmental education would play in the Ministry of Health:

“Environmental education can play a similar role as behavior change communication in communicating desired behaviors among the target populations. A perfect example can be cholera prevention communication as opposed to cholera emergency messaging. This could save the Ministry of Health a lot of resources by preventing diseases and not curing them”.

“The lifestyles and hygiene practices of the majority Zambian population are not conducive for good health. Let’s take for instance, littering, indiscriminate dumping of refuse and unhygienic public cleansing, these are widespread even in areas where the requisite infrastructure has been put in place. This points to low levels of basic cleanliness and hygiene awareness in people. Therefore, environmental education can play that role of public awareness, maybe, people can have different attitudes towards the environment”.

“Environmental education can be vital in the Ministry of Health because people will be educated on what a clean, safe and healthy environment is”.

“The Ministry of Health should incorporate environmental education because, with it, so many diseases would be prevented as well as enabling the Ministry of Health to cut on the costs associated with treating diseases by the government. Most diseases affecting people are preventable but information is not widely distributed in full”.

As observed by the researcher, figure three shows the attitude of people towards the environment they were living in. A lot would wonder as to why people could keep their home surrounding in that state, but the answer could still remain the same that such kind of people needed a lot of information on how they should stay healthy in their environment. Figure 4.3 shows the behavior of some residents failing to keep their environment clean and healthy by throwing litter anyhow including where they drew water which the researcher thought was a source of concern.



Figure 4.3: Waste disposal in some homes.

(Source: Field Data, 2019)

In view of figure 4.3, EE could be used to educate people on liquid and solid waste disposal. People would be educated on how to dispose of waste in the environment and they could be aware of how to manage the waste in their environment.

4.6.2 Educating People on Liquid and Solid waste Disposal

With better use of different approaches to educate people on using other means of disposing waste, we would see a clean and healthy Zambia. Participants had this to say regarding incorporation of environmental education in the Ministry of Health:

“I can really welcome the inclusion of environmental education in the Ministry of Health because people will be aware of how to manage the waste in their environment. If you have observed, domestic waste in our community is mostly disposed into open spaces, roads and drainages while industrial waste and clinical waste is sometimes disposed of at sites meant for domestic waste thereby posing serious health hazards and pollution to the environment. Environmental education will instill knowledge in the public about the effects of such practices to their health and the environment”.

“Environmental education can play a role of educating the public on the importance of a healthy environment. It can promote health through educating the public to have their surroundings clean and disposing their waste in designated areas”.

“Environmental education will educate every department of the society about improper management of industrial, domestic and medical wastes which are often seen as indiscriminate waste discharge or dumping in different parts of the country. This is a major cause of environmental degradation leading to a poor environmental health and diseases. Improper disposal of solid wastes and the absence of engineered sanitary landfill could cause direct health risks to people living around the waste dumped. Human beings need to be protected as much as possible from contact with waste. People need to be aware of all such things to avoid diseases”.

Figure 4.4 confirms poor management of waste and illegal disposal of waste in Kalingalinga township of Lusaka district. Figure 4.4 shows how residents of Kalingalinga continued disposing of waste in the environment which caused a lot of air pollution and some residents complained that, the spread of diseases were high during rainy season because there was a mixture of waste and flooded water which resulted into waterborne diseases.



Figure 4.4: Poor waste management in Kalingalinga Township.

(Source: Field Data, 2019)

4.6.3 Sensitisation of Professional Providers of Health in the Ministry of Health

Environmental education would be there to educate health personnel about ways in which the environment is important to the operations of the health sector and also to educate them on the effects of lack of proper care for the environment and how waste from these health facilities could affect the environment. Therefore, the staff of the Ministry of Health would have awareness and sensitivity about the environment and environmental challenges. In the process, the staff would help maintain environmental quality as well as have skills to mitigate environmental problems. The health systems were regarded among the highest waste generating sectors and the hazardous health care waste may pose a wide range of environmental and health risks. One participant from the potential users of health care services complained about the way one health facility was kept in terms of cleanliness saying:

“We have seen health workers coming into our communities telling us to keep our surroundings clean, but, look at the environment of this hospital. It’s not clean and the air quality when you enter the wards is not conducive. These people (health workers) must also learn how to keep the environment they are working in clean”.

Another participant with a different view said:

“Fostering environmental education in the Ministry of Health can provide measurable benefits and opportunities in terms of health protection and promotion, increased community participation and reduced environmental risks”.

4.6.4 Sensitising Patients on Environmental Issues

Participants viewed environmental education as a tool that would educate the patients on issues that are found in the environment and how they could prevent them from causing diseases. In as much as doctors and nurses addressed the health problem within the patient, there was also need for patients to receive education about the environment in which they lived, worked and aged which generated diseases. Patients should not only receive treatment at health facilities but they

should also be educated on how to prevent diseases from the environment. People would also be educated on how they should take care of themselves and others. Participants had this to say:

“Environmental education will be vital in hospitals because there, they will sensitise us about how we can prevent diseases, promote self care and make choices that can enhance health. So the Ministry of Health should just welcome the idea of environmental education in its operations”.

“Environmental education in the Ministry of Health can also be a good approach. Patients can be sensitised against multiple risk taking behaviors including hazardous combinations of alcohol, drug use and unsafe sex which has remained particularly high among the youths”.

4.6.5 Environmental Education Would Contribute to the Body of Knowledge to Environmental Health Impact Assessment

Environmental Health Impact Assessment (EHIA) aimed at determining the current and future health consequences of planned developmental programmes and activities. It was an essential tool for prevention and minimizing environmental hazards and risks. Therefore, one participant linked environmental education to environmental health impact assessment and said:

“I feel environmental education should be included in the Ministry of Health, and I believe for someone to carry out that education should be a trained person in the field of environmental education. Therefore, that person can help in carrying out environmental health impact assessment because of the knowledge and skills that they have on environmental impact assessment”.

4.6.6 Educate People on the Effects of Deforestation to Human Health

Participants recognized the importance of environmental education in shaping attitudes and equipping individuals and communities with knowledge on the environment. Environmental degradation was causing serious detrimental health impacts for humans. One participant had this to say about environmental education and how it would educate the public about the effects of deforestation to health:

“Environmental education would be a good way to go by the Ministry of Health. There are certain things that we don’t hear from some agents that deal with the environment like the relationship between the environment and health. I think, it will be nice for the Ministry of Health to incorporate environmental education in its sector. When you talk of deforestation, for example, it is a double blow to human health, it increases the spread of certain diseases while destroying plants that may hold the key to treating illnesses that plague a lot of people. So, environmental education will be used to teach people to reduce practicing deforestation”.

Another participant had this to say:

“Protecting natural landscapes can contribute positively to human health through protecting future medicinal resources, reducing the impacts of pollution and providing recreational places that support physical and mental well-being. Environmental education can help in achieving that”.

4.6.7 Educating the Public on Environmental Change and its Implications for Health and Human Well-Being

Participants acknowledged environmental education to be one of the tools in educating people on how some activities they did would have a negative effect on the environment and their health. Some participants acknowledged climate change as a major health risk multiplier, with existing impacts that were expected to increasingly affect human health including through negative changes to land, biodiversity, access to freshwater and higher impact of natural disasters which could result in deaths. Therefore, environmental education would address climate change and its impacts on the environment and social determinants of health. It would educate people to reduce on some of the activities that would lead to climate change. Participants had the following to say:

“There is a connection between the environment and health. People need to be educated to avoid degrading the environment because, if they do not stop, then we are going to experience health problems in future”.

“Environmental education will educate members of the community on the causes of climate change and the effects that it has on human health”.

“People need to understand that some of the activities that they do have a negative impact on the environment that can result into climate change which can lead to abnormalities of human well-being. Therefore, they definitely need environmental education, we all need environmental education if we have to live a healthy life and survive”.

“Environmental education can provide awareness on people especially those in rural areas on how they should adapt to environmental changes such as climate change to avoid getting sick”.

Additional Comments by Participants on the Potential Role of EE in the Ministry of Health’s Agenda

- i. Environmental education would be of value in health promotion with specific focus on hygiene and sanitation. It should be there in the MoH so that we can have a healthy and clean Zambia.
- ii. Environmental education involves awareness to the general public on health issues and, therefore, its implementation in the Ministry would create a wider base for health education to reach the public. The MoH should intensify environmental education.
- iii. As people are being attended to at health facilities, they should stand a chance of being exposed to this knowledge.
- iv. Environmental education will make known programmes in the MoH that are aimed at addressing environmental and health issues and, hence, facilitate the effective participation of the general public in the programmes.
- v. Environmental education should become an integral part of the Ministry of Health’s core function. Putting environmental education under the MoH is a wonderful and well thought idea which should be supported greatly by Zambians and its government.

Reasons Why the Ministry of Health did not need to Incorporate Environmental Education in its Transformative Agenda

A total of five participants, representing 12.5 percent stated that the Ministry of Health did not need to incorporate environmental education in all its establishment and structures. Reasons for their opinion in this regard are tabulated below:

- i. Because Environmental Health Technologists were already providing awareness hence, there was no need to incorporate environmental education in the Ministry of Health.
- ii. Not very familiar with environmental education and what its purpose could be in the Ministry of Health.

CHAPTER FIVE: DISCUSSION OF FINDINGS

5.1 Overview

This chapter presents the discussion of findings and therefore, the main issues that have been presented in the previous chapter shall further be highlighted and discussed in relation to the objectives of the study and the related literature. In this chapter, like the preceding chapter, data has been organized and presented according to the sequence of the four research objectives of the study which are environmental education activities which were being used by the MoH in the year 2019, environmental management strategies implemented by the Ministry of Health, new paradigm of Zambia's Ministry of Health to promote health and the use of environmental education in the agenda of Zambia's Ministry of Health. However, this chapter will first discuss the demographic characteristics of participants and their knowledge on environmental education.

5.2 Demographic Characteristics of Participants

The study started by looking at the demographic characteristics of participants and the findings reported the lowest age group of participants to be between 20 and 25, and they were two, all females representing 5 percent. The highest age group was between 46 and 50 with two participants, one female and one male representing 5 percent respectively. The difference in age groups of participants meant that they had different ways of understanding and interpreting the researched objectives, hence gave different views on the subject matter. Age groups of 36 to 50 showed much experience in the way they articulated issues in regard to their lived and working experiences on how human beings related to the environment and how diseases emanated from the environment. In gender, the findings have indicated that 23 females representing 57.5 percent participated in this study more than the 17 males representing 42.5 percent implying that females gave more views in this study than males.

The education level of participants indicated that 39 participants representing 97.5 percent acquired tertiary education with different qualifications ranging from diploma to masters degree level. From the 39 participants, 17 participants were males representing 42.5 percent and 22 were females representing 55 percent. Only one female participant representing 2.5 percent did not

reach tertiary level but completed her secondary education. The education level of participants also showed a significant difference in the way issues were raised and interpreted.

5.3 Environmental Education Activities Used by the MoH in the Year 2019

The researcher began by asking participants if they had ever heard of EE before and if the MoH implemented EE by complying to the requirements of the National Policy on Environment, 2007. With regard to the findings, most participants (85 percent) agreed that they had heard of EE and very few (15 percent) had not heard of EE before. On the other hand, most participants (82.5 percent) agreed that the MoH implemented EE and very few (17.5 percent) did not agree that the MoH implemented EE. The findings have indicated the nature of EE activities that the participants felt the MoH was implementing and they included door to door health education, television health programmes and drama on health issues. This was in line with Zambia's National Health Strategic Plan of 2017-2021 which focused on delivering quality health services across the continuum of care which includes promotive, preventive, curative, rehabilitative and palliative care, provided as close to the family as possible (GRZ, 2017). Based on the findings, EE in the MoH was moderately effective at that moment. There was need to make it more effective by engaging EE experts who were equipped with knowledge and skills on EE to fill in the gaps that existed.

5.4 Environmental Management Strategies Used by the MoH

Objective number one of this study sought to determine the environmental management strategies implemented by the MoH in Zambia. The findings have indicated that the Zambia's MoH had played a significant role in the quest to prevent diseases by coming up with the environmental management strategies that would help promote health and manage the environment well. The strategies put in place that this study found include water quality monitoring, daily disease surveillance, school health education, food inspection, stakeholders partnership, use of incinerators and disinfectants and community outreach. These findings on environmental management strategies are discussed below.

The Zambia's MoH had been conducting water quality monitoring by taking water samples to ascertain the water quality as to whether it was safe for drinking or not. 29 participants from both

professional health care providers and potential users of health care services representing 72.5 percent of the total participants responded that the MoH was taking water samples to determine the content of water because they believed water was one of the sources of diseases and therefore, needed to be monitored regularly. Water quality refers to the chemical, physical, biological and radiological characteristics of water. It is a measure of the condition of water relative to the requirements of one or more biotic species and or to any human need or purpose (Diersing, 2009). Water quality was most frequently used by reference to a set of standards against which compliance, generally achieved through treatment of the water, could be assessed. The most common standards used to assess water quality related to health of ecosystems, safety of human contact and drinking water.

Although the MoH was really working hard to ensuring that people of Zambia had safe drinking water through conducting water quality monitoring, the findings revealed that waterborne diseases such as cholera, typhoid, dysentery and diarrhea still emanated from the water sources. This was because of members of the public drinking contaminated water which they thought was safe. During data collection, the researcher found that participants from the environmental health department who mostly did water samples could not explain clearly the extent to which the sample might be representative of the water source of interest because many water sources varied with time and with location. There could have been some water sources where water quality could not have been sampled and remained unsuitable for desired uses resulting into an outbreak of waterborne diseases. Besides, some members of the community lacked education on how human activities could affect water and how best they could protect water quality. Human activities that modified water quality included household cleaners, throwing animal waste, industrial chemicals, litter, pesticides and adding fecal bacteria from sewage in water sources. There was also a gap in the way information was being distributed to the public about the water quality they were using. Information reached the members of the public late, when an outbreak of any waterborne diseases had already occurred. The International Organisation for Standardisation (ISO), (2011), argued that, “although water quality is usually sampled and analysed at laboratories, nowadays, citizens demand real-time information about the water they are drinking”. Therefore, informing the public about the water they were drinking on time could help prevent diseases from occurring now and in the future. A continuous process of educating the public about drinking treated water was also less effective. Most information about how to

treat water was through television and radio advertisements, but, one question still remained unanswered on how the majority poor Zambians that were living in rural areas with no television set or radio got the information on water quality and treatment.

Daily surveillance of diseases was also one of the environmental management strategies used by Zambia's MoH to track and prevent diseases from escalating according to the 23 participants all from the professional providers of health care representing 57.5 percent of the total participants. Surveillance is the act of monitoring and interpreting the activities of an object of interest. Therefore, disease surveillance is the continuous, systematic collection, analysis and interpretation of health related data needed for the planning, implementation and evaluation of public health practices. It is an epidemiological practice where the object of interest is defined to be a disease. It is a system which provides information about disease manifestations and severity, etiological characteristics of the disease, their space time distributions and the use of potency of treatments (Elida, 2011). According to the findings, the MoH performed daily disease surveillance for both communicable and non-communicable diseases and had made significant strides in the implementation of the disease surveillance strategy. Such surveillance served as an early warning system for impending public health emergencies, documented the impact of an intervention, tracked progress toward specified goals and monitored and clarified the epidemiology of health problems to allow priorities to be set and to inform the public health policy and strategies. In order to effectively implement the daily disease surveillance strategy, the MoH engaged the NHCs to help monitor the disease because NHCs were found in the community and knew the problems that were there. This was a good approach because community engagement in the execution of programmes was very vital if the intended goal was to be attained. Health promotion is not just the responsibility of the health sector. The responsibility is shared among individuals, community groups or schools, health professionals, health service institutions and governments. They must work together to provide a health care system that promotes health (Fosse & Helgesen, 2017). In this view, the MoH in Zambia decided to work hand in hand with the NHCs to help the ministry track the diseases and report to relevant authorities for action.

The MoH had the desire and interest of taking health education into schools where various issues regarding health were discussed. They intensified health education in schools considering that

learners came from different backgrounds where some could not have access to health information. The aim was to improve health through education and advocacy, promoting healthy life-styles and effectively navigating the health care system. The provision of health education to learners had offered a chance to make informed decisions on how to stay healthy and involve themselves in behavior change activities. Moreover, learners were able to identify some health issues in their communities and offered suggestions on how to solve them as reported in the findings that pupils used the same knowledge on health education to solve some health issues in their communities. Health education would positively influence the health behavior of individuals and the communities as well as the living and working conditions that influence their health and by focusing on prevention, health education would reduce the costs both financial and human that individuals, employers, families, medical facilities, communities and the nation would spend on medical treatment. However, the MoH should have also emphasised on providing environmental education to the learners because there is a difference between health education and environmental education. They should have taught learners on the relationship of man to the environment, methods of waste disposal and environment protection, diversity of effects of the environment on health, their complex and effects, ways and methods of health protection and the issue of effects of the environment on individual health and health of other people. Environmental education leads to understanding of the importance of care of the nature in the context of organization of mass sporting events. For example, understanding of the necessity of continuous transition to sustainable development of the society and understanding the importance of responsibility for conduct of the individual and the society as a whole. Like in Norway where environmental education is based on teaching learners to understand and take care of themselves, understand and take care of one another, understand and take care of their local community, understand and take care of nature, planet and make good sustainable decisions about the future of a democratic society. Heggen (2016) has highlighted that, “the social and interpersonal aspects are found in understanding and taking care of one another and by interaction that cares for the environment and society in the best way possible and takes care of nature”. Environmental education allows for complex understanding of the issues of human relationship to the environment, the basic living conditions and responsibilities of the current generation for the future life. Therefore, the MoH should have used the social-environmental approach which could promote health by addressing the social determinants of health, such as

access to food, housing and education. They should have also encouraged schools to create environments that support health for example, a school providing trees and sheltered areas to protect learners and staff from the sun's harmful rays. Learners should also be encouraged to involve themselves in physical activities because they contribute towards a holistic development of the child by making him or her physically fit, mentally sound, socially well adjusted and emotionally stable.

Furthermore, the MoH conducted food inspection in restaurants, butcheries, grocery stores, mobile food units and bars. A principle goal to be achieved by conducting a food inspection was to promote health, prevention and control of diseases, disability and death caused by food borne, waterborne and environmentally transmitted infections through education, training and regulation. However, as observed during data collection, there was more to be done by the MoH in relation to food inspection. Majority Zambians were aware of food safety, but they needed more information to achieve and maintain safe food handling behaviors. This was evidenced in most restaurants where surfaces of equipments, floors and walls appeared to be unclean, most toxic items such as cleaning fluids were also stored on a shelf next to food. In some bars, toilets and hand washing facilities were not convenient, accessible, well-designed and properly installed. Laws were there on how perpetrators should be dealt with but there was weak enforcement of the law by the responsible officers. On the other hand, the MoH needed not to only stop food borne disease outbreaks once they occurred, but preventing them from happening in the first place. The Houston Health Department (HHD) (2018) highlighted that, "long-term prevention of food borne outbreaks takes the actions of many partners in the food production chain, stretching from farm to table". Therefore, there was need by the MoH to effectively conduct inspections of wholesale establishments such as warehouses, commercial food processors and commercial bakeries, inspections of mobile food units and inspections of catering businesses, hospitals and nursing homes.

To further strengthen the provision of health promotion, the MoH worked hand in hand with other stakeholders to promote a safe and a healthy environment. Community based health promotion required effective participation and partnership of diverse numerous stakeholders from the community as well as external professional organizations. Hence the MoH worked with the Ministry of Local Government and Housing in the collection of garbage from communities,

worked with Disaster Management and Mitigation Unit that dug drainage systems to avoid stagnant water and provided relief food for the malnourished group of people, the NHCs that sensitized the community to keep surroundings clean, the media that advertised and televised health programmes, and other stakeholders such as the NGOs. Stakeholders' partnership in community based health promotion could bring about fruitful and sustainable benefits for those involved. Although partnership takes some time to nurture relationships, when facilitated effectively, collaborative work would enable more systematic ways of working towards health promotion and community development. Community partnership was considered to be one of the ways in health promotion in Zambia and beyond. Empowering community is based on effective mutual collaboration of professional stakeholders of the programme with community level stakeholders. Kumar (2011) argued that health issues can be effectively addressed by adopting a holistic approach by empowering individuals and communities to take action for their health, fostering leadership for public health and creating sustainable health systems. However, there was still some more work to be done in information dissemination about how to keep the environment clean and safe from diseases. People needed to be provided with environmental education for them to have realized the importance of keeping the environment clean and the relationship between health and the environment. This was because, in as much as the MoH and other stakeholders tried to involve everyone in health promotion, their efforts to some extent proved futile because people still continued polluting the environment by throwing litter anyhow, throwing solid waste in drainages and did not learn ways of depositing waste. Besides, there seemed to be some gap in mutual understanding between the professional stakeholders and the community which made the community health programmes fail. Inadequate knowledge and attitude towards, and skills of working successfully with the communities among professional stakeholders make the task of developing partnership with community difficult (Laverack&Keshavarz, 2011). Therefore, stakeholders and other health promoters should increasingly be involved in programmes that require them to have the competency of empowering people by enabling individuals and communities to have greater influence over the determinants of their health.

The other environmental management strategy revealed was the use of incinerators and disinfectants in order to address the issue of environmental pollution from medical waste and for disease prevention and control. The MoH moderately managed health care waste well through

finding possible ways of disposing the waste. Health care waste in this study included all waste generated by health care facilities, laboratories and that were produced during undertakings in the home, garbage, rubbish and any unwanted matter that may be hazardous to human health and may create environmental risks. The MoH used incinerators to dispose of the health care waste which was the proposed technology recommended for all health care facilities as a technology for final disposal of health care waste. Incineration is a high temperature dry oxidation process that reduces organic and combustible waste to inorganic, incombustible matter and results in a very significant reduction of waste volume and weight. This process is usually selected to treat wastes that cannot be recycled, reused or disposed of in a landfill (WHO, 1999). In as much as the MoH tried to dispose of health care waste, some waste was still seen in and around some health facilities which needed immediate attention. This was because waste in incinerators was still there and full. Deposited waste was supposed to be burnt on a daily basis which was not the case at some health facilities. Some health care waste were disposed through a communal dumpsite under the operation of Lusaka City Council (LCC) and the direct impact of such waste on human beings or the environment posed occupational health safety risks and consequences of undesirable environmental pollution. Moreover, one of the participants interviewed showed incapacity to give reliable descriptions of the waste streams and quantities of health care waste generated. It also revealed that some health workers had little knowledge on waste generation profile including safe handling and that is from collection, segregation, storage and transportation to final disposal. Therefore, most health workers needed to pay particular attention in the way waste was being disposed of in their health facilities. On the other hand, the MoH positively contributed to the protection of a population from transmissible infectious agents through disinfection of the equipments they used in health facilities and disinfecting the floors in health facilities. Disinfection was strictly about eliminating possible pathogens or micro-organisms that could bring about diseases by reducing them as close to zero as possible. The best way to avoid infection in health facilities and beyond was obviously to have the environment free of disease causing organisms. This could be achieved through cleaning and disinfection of any item, facility or utensil that could have infections.

5.4.1 Challenges Faced in the Implementation of Environmental Management Strategies

In an effort to promote health by helping humanity change the way they lived and in order to address the converged health issues, the staff of the MoH in Zambia faced some challenges in their operation ranging from lack of compliance to health regulations and standards, inadequate financial and material resources, social cultural attributes, lack of employment and low literacy levels on some community members. These challenges are discussed below.

The findings revealed that lack of compliance to health regulations and standards hindered the operations of the MoH staff in an effort to promote health to the community. The MoH used policies and guidelines to standardize and clarify care and improve efficiency, productivity and safety. However, some members of the society failed to comply with such standards more especially manufacturing industries, restaurants and other marketers. For example, the state of occupational safety and health was poor in Zambia. A lot of workers in industries worked without protective clothes and boots thereby getting exposed to chemicals which could result in sickness. Garbage collectors also collected garbage without gloves and proper clothing which posed a danger to their health. The MoH's focus was for protection of health and welfare of people in the workplace and people that might be adversely affected by the activities of the work place. Some restaurants, bars and markets also failed to comply with laid down health regulations and standards as floors and walls were dirty and had poor water and sanitation. However, non compliance could be related to lack of regulatory knowledge or comprehension by the target group. It could have been that requirements were too complex to know and understand. People could not comply with regulations if they did not understand what was required of them to do, meaning, the regulations were not well explained to them and moreover, not everyone was able to read and interpret the laid down regulations. Above all, failure to monitor the compliance of health regulations and standards regularly could also contribute to people failing to comply with them. A rule that is on the books but not monitored is unlikely to elicit compliance. Random inspections among the target groups have the effect of making and enterprises that are normally law-abiding constantly aware of the existence of enforcement activities and tend to reduce the likelihood of future non compliance. However, monitoring that is not rigorous enough or not targeted at high risk areas is less likely to be effective. Insufficient monitoring of compliance in

this case can reduce compliance considerably (Organisation for Economic Co-operation and Development (OECD), 2000).

The EHTs further stated that the department lacked the capacity to go out and conduct health promotion and training workshops with members of the community due to inadequate funding and material resources to use. The money was required for transport and buying of materials to use in the field. In a situation that EHTs decided to walk into the community, it was still a challenge to deliver as to the expectations because they lacked the material resources to use. That made the provision of health to be less effective as resources were not enough to cater for the whole community. Hence, that implied that public awareness and education on key health issues were not enough and that could still lead people to engaging themselves in health risks out of ignorance more especially those in rural areas.

The study further revealed that social and cultural attributes was another challenge experienced by the staff of the MoH. The health promotion movement aimed to overcome the gaps in the biomedical model, articulating the whole society in order to improve the quality of life for individuals and the collective. However, one challenge lies in overcoming the traditional, hegemonic model in constructing a health paradigm that considers daily events of individuals and collectives in their way of life as well as singular and objective expressions in determining health and illness. Many rural communities had deeply rooted traditions and cultures around food, lack of trust for medical professionals and outsiders, and social beliefs around certain behaviors. Therefore, some members of the community refused to listen to the health workers who were providing health information and services, and others were chasing health workers from their compounds as reported by one participant.

However, it was not prudent for some community members to entirely refuse the services of health workers while completely relied on traditional beliefs. Omonzejere (2008) highlighted that, “many Africans believe in the above spiritual hierarchy and have a firm belief in God and ancestors. The African concept of health, disease and treatment are best understood within the framework of African metaphysics, ethics and cosmology. Hence, the African notion of health and treatment cannot be evaluated exclusively by a western medical paradigm. The use of a western paradigm for this purpose would inevitably result in ideological, epistemic and perhaps ethical conflicts with the African worldview of spirituality”. Therefore, for any health promotion

to effectively work, there was need for the health professionals to understand and appreciate the culture of the groups they were targeting. Besides, in as much as the western worldview did not recognize traditional herbs and medicine, they had been effective in healing a person. Hence, there should be a reconciliation that would balance the two worldviews, thus, the traditional medicine and herbs should be scientifically tested and on the other hand, western system should also recognize the fact that the traditional medicine and herbs really worked in healing a patient. Cultural competence is about knowing, utilizing and appreciating the culture of others in assisting with the resolution of individual, community or family problems (DeSantos, 1997). In this view, health workers needed to develop the ability to engage with the culture, beliefs, values and practices that could have built solidarity and agency with some of the communities to access health promotion interventions.

Lack of employment and low literacy levels on some community members also contributed to the hindrances of health promotion in the communities. Unemployed people in the community always associated field health workers to food or money and when nothing like that was seen, they shunned away from listening to health information and that contributed to low levels of health information by the community members. Health education addressed common problems such as communicable diseases, high fertility rates, poor water and sanitation, and low levels of immunization. However, most community members had difficulties to communicate with health care providers, to follow basic instructions and medical advice due to low literacy levels. Fear, embarrassment and a non user friendly health care system were inhibiting many community members from seeking clarification regarding what was meant by interventions, treatment and medical advice. The failure to address low health literacy levels would carry high costs in terms of individual health, health care spending and the economic well-being of the nation as a whole. Therefore, there should have been wide scale public information interventions aimed at providing information on the causes of specific diseases and conditions so as to facilitate prevention and control. Research by Baker et al (2007) showed certain direct links between health literacy, health outcomes and health care expenditures. Literacy was an independent factor in the timing between preventive and curative treatment, how well patients could search for the best treatment given a medical condition, whether they could search for the best medical providers and how well they could find the best diagnostic services. Hence, health workers

needed by all means to communicate with community members using their local language and make emphasis on certain medical terms.

5.5 New Paradigm of Zambia's Ministry of Health

The second objective of this study sought to explore the reforms that were made by the MoH in an effort to promote health in the country. In order to achieve this goal, two categories of participants were interviewed. The first category comprised of professional providers of health care and the second category comprised of potential users of health care services. The changes that were revealed by the research findings included the creation of Health Promotion, Environment and Social Determinants of Health department, fostering the Keep Zambia Clean, Green and Healthy Programme, HIV Testing, Counseling and Treatment, and HIV Self Testing, and upgrade of clinics to first level hospitals.

The findings revealed that the MoH made a paradigm shift from the traditional way of treating infections when they occurred to preventing them before they occurred by taking into consideration all determinants of health that had an influence on the total health of any being when dealing with disease prevention and control. Therefore, in a bid to improve health at all levels, the MoH created a directorate which was called the Directorate of Health Promotion, Environment and Social Determinants of Health to be included in the Ministry of Health's structure at all levels to ensure a holistic approach was utilized when managing the health of the Zambian people. The shift had been necessitated by the fact that the country's disease burden had generally continued to rise despite the massive investment from government and its cooperating partners in the treatment platform (GRZ, 2017).

The new directorate's mandate included promoting good health, preventing and controlling disease, coordinating environmental health, occupational health and food safety, fostering intersectoral collaboration within the framework of whole government and whole society, buying into the principle of Health in All Policies (HiAP) (Health Press, 2017), which is also in line with one of the principles of public health in Norway. According to Leppo, et al (2013), the principle of Health in All Policies implies that equitable health systems are important to public health, but health inequities arise from societal factors beyond health care. As in Norway, Health in All Policies addresses the effects on health across all policies such as education, housing, agriculture

and transportation. It seeks to improve health through structures, mechanisms and actions planned and managed mainly by sectors other than health. Based on the findings, the researcher concluded that within this unprecedented prioritisation of health promotion, prevention and control of disease, the paradigm shift would greatly enhance primary health care and expedite Zambia's attainment of a healthy and productive population contributing to the socio-economic development of the country. Therefore, the MoH had an important role to play in nurturing and enabling health promotion by increasing knowledge and disseminating information related to health and developing an environment conducive to health because health promotion involves a combination of health, education, political and economic, spiritual or organizational initiatives designed to bring about positive attitudinal, behavioral, social or environmental changes conducive for improving the health of populations.

The study findings further revealed that President Edgar, C. Lungu re-launched the "Keep Zambia Clean, Green and Healthy Programme" on 28th April, 2018. According to the findings, the aim of the programme was to resuscitate the towns and villages by raising awareness on the effects of a clean environment on human health. It was also aimed at getting rid of the filth in the country which was believed to be a major contributing factor to the high prevalence of infectious diseases such as cholera and dysentery. Moreover, the Zambian people were also urged to endeavor to mitigate possible harm to the environment by avoiding the indiscriminate cutting of trees and instead embracing the habit of planting trees and grass in the surroundings. In view of this, the researcher observed that the Keep Zambia Clean, Green and Healthy Programme had shown positive signs in keeping the environment clean. There was active public participation during these activities. The evidence was shown from the participation of top government leaders, the business community and the general public in the cleaning of the environment, and that improved the faces of cities and towns in the country. However, while this was a good move, there was also need to inculcate a sense of responsibility among citizens especially those who littered surroundings at will. They were supposed to be provided with environmental education for them to understand the relationship between man and the environment, how to clean and take care of their environment, plant trees, flowers and take care of their landscape in order to stay healthy. Citizens were supposed to develop the habit of keeping the environment clean on a daily basis and not only on the last weekend of every month as revealed in the findings. Healthy environments are the key for a better health, therefore, in a bid to protect the health of the

Zambian citizens, there was also need to ensure that all leaders, policy makers and individual citizens protected the environment and making interventions at environmental level which would provide a lot of benefits for the present and future generations.

The study findings revealed that the MoH encouraged members of the public to do HIV testing and therefore, introduced HIV Testing, Counseling and Treatment which was just the same as Voluntary Counseling and Testing and also introduced HIV Self Testing. The findings revealed that the MoH implemented the routine testing as part of diagnostic screening. What they used to do was that, when a person visited any health facility, the health care provider had to counsel the person and based on the symptoms, the person would be advised to undergo an HIV test as a routine. Moreover, the HIV self testing introduced by the MoH also enabled people who were shunning away from being tested by health workers to test themselves for HIV privately and at their own convenient time. Based on the findings, it was evident that the MoH made possible strategies of helping people know their status and make decisions on how they should live their lives. This is in line with WHO (2016) that highlighted that, despite low uptake of HIV testing in Zambia, increased provision of HIV testing had been evident, with access available at many Voluntary Medical Male Circumcision (VMMC), Sexually Transmission Infections (STIs), Prevention of Mother to Child Transmission (PMTCT) and blood testing sites. Mobile outreach, community based testing and door to door HIV testing and counseling initiatives are also increasing uptake of HIV testing in Zambia. However, despite the country's high prevalence HIV rate, there were significantly low rates of HIV knowledge among the general public and that contributed to people continuing having fear to conduct HIV testing. A study in by Gari, et al (2012) found a combination of reasons explaining why people were not testing, including fear of stigma, rejection by their sexual partners, a fear of antiretroviral treatment, and a belief that traditional medicine would keep them healthy if they became ill. These beliefs were ill informed, and also reflected the continued stigma around HIV in Zambia. Therefore, it was imperative for the MoH to provide more information to the public on the measures that they took to enable people do HIV testing and the importance of knowing their HIV status and facilities where they could find HIV testing services or should have encouraged self testing though the researcher concluded that HIV self testing was not a very effective strategy because the client had not undergone counseling and if found positive, the reaction might be very bad as compared to someone who had undergone HIV counseling.

The Zambian MoH had started upgrading clinics to first level hospitals which brought a lot of joy to the communities where the clinics were upgraded. As the findings indicated, the researcher also commended the government through the MoH on their effort to upgrade clinics to first level hospitals because that increased health services to be provided to the public such as surgical operations and reduced referrals. Apart from increased health services, there was expansion of physical structures and reorganization of units and departments, increased medical equipment and devices at the disposal of the hospital enabling it to provide advanced and complex care to patients. However, some health workers complained of workload due to insufficient workers at the upgraded hospitals. Workload in this case refers to any duty that a nurse performs in relation to her patient from start of work to close of work (Michalski, 2000). Therefore, according to the findings, that resulted in less time spent with the patient compared to how much time they spent with each patient before upgrading of clinics to first level hospitals and that could negatively affect their sense of caring and nursing patients. Hence, there was supposed to be a balance in worker-client ratio so that health services would be effectively conducted.

5.6 Potential Role of Environmental Education in the MoH's Agenda

Objective three of this study was aimed at establishing the role that environmental education could play in the transformative agenda of Zambia's Ministry of Health. It first began by asking participants' views on the incorporation of EE in the MoH at all levels and structures. 34 participants of the total number representing 85 percent agreed that EE should be incorporated in the MoH and stated the role that EE could play in a bid to improve health in the country. Five participants of the total number representing 12.5 percent did not agree to the incorporation of EE in the MoH while one participant representing 2.5 percent did not know what to say and the role that EE could play in the MoH. Therefore, based on the findings, the majority of participants who agreed that EE should be incorporated in the MoH had stated the role that EE could play in the MoH as discussed below.

The findings revealed that EE could be very vital in the MoH because it could help in the transformation of people's mindset and attitudes to health practices as it was difficult for some people to change on their own but through education. The attitude of people towards the environment in Zambia was not pleasing looking at their practices towards the environment such

as throwing of litter anywhere they felt like throwing, poor waste management and unhygienic practices. All that implied that people lacked the knowledge of having a clean and healthy environment. EE could help instill into people the knowledge that could change the mindset and attitude of people towards the environment, it could be used as an awareness tool to change people's mindset and attitude towards the environment. The statements of the participants who referred to EE as a review of attitudes and of the relationship established with the environment collaborate with the literature of Thathong (2012) who stated that EE has a significant role to play in creating such knowledge and positive attitude and behavior about the environment among the individuals in the society as it helps enlighten individuals and give them greater insight into their own nature and the consequence of their actions. Education could help find novel ways of fostering positive attitudes to overcome environmentally destructive behaviors thereby leading the individual desire and willingness to take action for the environment. The MoH had formulated environmental management strategies to help curb some of the environmental issues, however, problems were still emanating due to the fact that the basis of the problems had not been resolved and most of the strategies focused much on control and treatment rather than prevention at the source of the problem. In as much as the MoH put more effort in curbing the vices, people's attitude and mindset were still the same towards the environment as they continued littering and degrading the environment. The research had confirmed that such actions might be related to the little available knowledge in people on the link between human beings and the environment and how such actions could affect their health.

The findings revealed that EE could educate every department of the society about improper management of industrial, domestic and medical wastes which are often seen as indiscriminate waste discharge or dumping in different parts of the country. Waste is an unwanted or undesired material or substance consisting of unwanted materials that are left over a manufacturing process or from community or household activities. The material can be discarded or accumulated, stored or treated, prior to being discarded or recycled while solid waste is defined as garbage, refuse, sludge and other discarded substances resulting from industrial and commercial operations and from domestic and community activities (ECZ now ZEMA, 2004). Waste management means the storage, collection, transport, recovery and disposal of waste. It also includes supervision of operation, after care of disposal site and actions as a dealer broker (Alwaeli, 2011). The management of waste had been a difficult and challenging issue in Zambia over the years. Poor

waste management had caused diseases such as cholera and dysentery. Our memories of the 2017/2018 cholera epidemic are still fresh and experience has shown that only frequent repetition of information from trusted sources like environmental educators could truly succeed in putting health information at the disposal of families in our communities. Poor waste management had also caused pollution, as well as water, air, soil, or land contamination, proliferation of pests and the loss of aesthetic beauty of the towns and cities. Therefore, EE could be used to educate the public on different methods of managing waste to avoid infections from occurring such as recycling, reuse and reduce of waste in the community.

The findings further revealed that EE could be used to educate the health care providers on environmental issues affecting health and how such issues could be prevented. According to one participant, EE could be important to educate health personnel about ways in which the environment was important to the operations of the health sector and also to educate them on the effects of lack of proper care for the environment and how waste from the health facilities could affect the environment. Therefore, with EE in the MoH, the staff could have awareness and sensitivity about the environment and environmental challenges. The claims for the inclusion of EE in the MoH lie on a participant who said that some health workers needed to ensure the environment they were working in was clean as some health facilities' environment were seen to be dirty and the air was not conducive for human inhalation. To conquer with the participant's claim, the researcher observed that some surroundings of some hospital wards were filled with litter and some had stagnant water on shallow drainages and some nurses administered oral medication on patients without asking them to clean their hands before taking medicines which was against their ethics and that could result in the transmission of more germs into their bodies. Therefore, the researcher concluded that it was supposed to be everyone's responsibility to making sure that the environment at health facility was clean and that everyone did the right thing in promoting health. It is also important to state that health facilities generated a lot of waste hence, there was need for the MoH to be fully involved in the safe management of biomedical and health care waste generated at health care facilities. Many health care facilities did not take due responsibility for the waste they generated to the environment and the public to ensure safe, efficient, sustainable and culturally acceptable methods for collection, storage, transportation, pre-treatment and final disposal both within and outside their premises (Mundia&Mbewe, 2003). EE could increase awareness of health care waste management at all

levels in the MoH. Moreover, EE could prepare health workers for environmental emergencies and different environmental conditions such as climate change. However, efforts to strengthen environmental education in health systems could succeed only with the active collaboration and participation of an engaged health workforce.

Participants viewed EE as a tool that could educate the patients on issues that were found in the environment and how they could prevent them from causing diseases. In as much as doctors and nurses addressed the health problems within the patient, there was need for patients to receive education about the environment in which they lived, worked and aged which generated diseases. Patients should not only receive treatment at health facilities but they should also be educated on how to prevent diseases from the environment. Patients would also be educated on how to take care of themselves and others. EE could educate patients and the public at large against multiple behaviors including hazardous combinations of alcohol, drug use and unsafe sex which had remained particularly high among the youths. This is in line with the South African National Health Promotion Policy and Strategy 2015-2019 which advocated for the creation of an enabling environment that promotes health behavior. The same South African policy emphasized on establishing and maintaining health promoting crèches and early learning centres that would promote safe and health environments for example, clean water and adequate sanitation and personal hygiene practices. It further stated to advocate for health promoting schools that would complement the work of the school health teams through empowering learners and educators to undertake health lifestyle practices including health eating habits, prevention of substance abuse, increased physical activity and safe sexual practices and to work with the private sector and labour unions to promote healthy lifestyle practices within the work place. Therefore, in line with that, patients could be educated on how they should make good decisions about their living lifestyles and how they should prevent diseases from the environment because the environment was critical in causing diseases.

The findings revealed that EE could add to the body of knowledge on Environmental Health Impact Assessment (EHIA). Environmental health impacts were the overall effects, direct or indirect, of a policy, plan, programme or project on the health of a population. Anything which altered a determinant of health might have an impact on health. If members of a community were exposed to a risk such as agricultural pesticides, that could cause health impacts that could result

in health problems, and if that risk factor is removed from the environment, it could be expected that the overall number of health impacts in the community could decline. WHO (1999) defined a health impact assessment as “a combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population and the distribution of those effects within the population”. EHIA provides a systematic process through which health hazards, risks and opportunities can be identified and addressed in a developmental activity planning process to avoid transfer of hidden health costs and to promote multi-sectoral responsibility for health and well being. EHIA is a multi disciplinary activity, crossing the boundaries between the public health, health care, environment and social sciences (Hassan et al, 2006). Thus, on the basis of the above definitions, EHIA can be described as the process of examining from human activities that may have an impact on the health of communities. Hence, EE could add more knowledge on how to conduct an environmental health impact assessment because of having a component of Environmental Impact Assessment (EIA) in its course and the skills gained in EIA could be applied when assessing an EHIA.

Deforestation had been the common environmental concern for developing countries around the world. Forests were faced with deforestation in which thousands of hectares (ha) were destroyed for land, ranching and pastoral farming, and timber and fuels (wood and charcoal). Zambia faced daunting challenges of deforestation at the rate of 250-300 thousand hectares lost per year. The pressure on the forest resources had been very heavy due to the fact that wood fuel still remained the main source of energy used by most households. However, most of the people that practiced deforestation did not understand the adverse impacts the act had on the environment and their wellbeing. Deforestation is the permanent destruction of forests in order to make the land available for other uses, often resulting in damage to the quality of land. According to Zimmerman (2008), “deforestation is indiscriminate cutting or over harvesting of trees for lumber or pulp, or to clear the land for agriculture, ranching, construction or other human activities”. Therefore, the findings revealed that EE would be used to educate people on the effects of deforestation to animal and human health. Participants highlighted that deforestation increased the spread of certain diseases while destroying plants that might hold the key to treating illnesses that plagued a lot of people. Hence, EE could foster sensitivity, appreciation and respect for the environment thereby developing a good relationship between man and nature.

Based on the findings, the researcher also argued that EE could help the public understand how their decisions and actions would affect the environment, builds knowledge and skills necessary to address complex environmental issues, as well as ways in which we can take action to keep our environment healthy and sustainable for the future. Most people cut down trees and burn forests due to lack of environmental awareness hence, EE could lead individuals to active involvement in environment creation and protection and would affect lifestyle and value orientation of the public towards sustainable development of human creation.

Participants acknowledged climate change as a major health risk multiplier, with existing impacts that were expected to increasingly affect human health including through negative changes to land, biodiversity, access to freshwater and higher impact of natural disasters which could result in deaths. The impacts of climate change included warming temperatures, changes in precipitation, increase in the frequency or intensity of some extreme weather events, and rising sea levels. These impacts threaten human health by affecting the food we eat, the water we drink, the air we breathe and the weather we experience. Exposure to extreme heat would lead to heat stroke and dehydration as well as cardiovascular and respiratory (Karl, et al., 2009). Excessive heat is more likely to affect populations where people are less prepared to cope with excessive temperatures. Certain types of populations are more vulnerable than others in the society. Therefore, EE could be used as a tool to provide awareness on people especially those in rural areas on how they should adapt to environmental changes such as climate change to avoid health issues that would come with such changes. Besides, some human activities like deforestation and burn of forests could cause climate change, hence, EE could educate people to reduce on such vices. Wildfires which were expected to continue to increase in number and severity as the climate changes, would create smoke and other unhealthy air pollutants which can lead to asthma attacks and other respiratory effects (Crimmins, 2016). EE could therefore, be used to educate the public on the effects of climate change to human health and how human induced activities could contribute to climate change, and how such vices could be avoided or reduced in order to have a good relationship between human beings and the environment.

Environmental education could ensure a decrease in the high rate of diseases faced by the country, such as HIV/AIDS, Malaria, Typhoid, Tuberculosis and Cholera. Environmental education could by all means contribute towards the solution of problems faced in Zambia and

globally, such as global warming and garbage. Environmental education could also educate people on how to conserve their environments, including those in and around clinics, hospitals and health centers. People that would be targeted for education could be those visiting health facilities, senior management and any place where people are found like markets, schools, churches, bars and any other public place. Environmental education could also be vital in the dissemination of information to the public in terms of disease outbreaks through the media and newspapers.

The participants gave their views, suggestions and opinions regarding the environmental management strategies offered by the MoH, the transformative agenda of Zambia's MoH and the role of EE in the transformative agenda of Zambia's MoH. According to the findings, in general, participants asked for a more effective environmental management strategy and inclusion of environmental education in the MoH. There was need to come up with a new approach to environmental management because the one which existed was not very effective and seemed inconsistent. The environmental management strategies must be practical and action oriented. The strategies in place were fine but lacked adequate implementation. Therefore, more sensitisation within the strategical structures of the MoH had to be implemented for environmental management strategies and health promotion to be effective. The likelihood consequences if the MoH ignored incorporating EE in its agenda would be continued costs on the government's part on diagnostic and treatment of diseases, and escalation of diseases from the environment as the health of individuals and communities was to a large extent, dependent by the environments and circumstances in which they lived and operated.

5.6.1 Reasons Why The MoH Could Not Incorporate EE In Its Transformative Agenda

Five participants representing 12.5 percent stated that the MoH could not incorporate EE in all its establishment and structures because EHTs were already providing environmental awareness, EE was the same as environmental health and one participant who was not sure of what EE was could not tell what its purpose could be in the MoH. In view of such reasons, the researcher had argued that EE was different from environmental health and that EHTs were more on treating the infections when they occurred but EE could be there to prevent the outbreak of diseases through education, awareness and sensitization. Nonetheless, the researcher had acknowledged the tireless efforts made by the health care providers in environmental awareness and health

promotion by stating that environmental education in the MoH was quite moderate but needed environmental education experts to fill in the gaps.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Overview

This chapter concludes on the role that environmental education could play in the Ministry of Health to promote national health. It has concluded that for people's mindset and attitude towards their health and the environment to change, they needed to be provided with environmental education. The chapter has further made some recommendations based on the study findings.

6.2 Conclusion

This study attempted to establish the role that environmental education could play in the Zambia's Ministry of Health and has shed light on existing efforts for improving quality health care in Zambia. The government through the Ministry of Health had made significant efforts in managing the environment and promoting health to its citizens based on environmental management strategies set to promote awareness to the people on how they should take care of the surroundings around them and how they should protect themselves from diseases. However, the Ministry of Health's efforts to achieve maximum promotion of health proved to be futile because majority of Zambians had negative attitudes and mindset towards their environment and did not understand the implications of their activities to both the environment and themselves.

The majority of environmental management strategies and environmental education that were being practiced by the health workers were mainly reactive to environmental problems. Quite a few if there was any were proactive, yet environmental management activities and environmental education activities were expected to be more proactive, that is, attending to environmental matters before they became a source of concern. Therefore, there was need for a shift from the common reactive measures of attending to already out broken diseases or environmental problems to more proactive ones by preventing environmental issues and diseases from breaking. Hence, there was need for the policy makers in the Ministry of Health to fully recognize and incorporate environmental education in all the Ministry of Health's establishment and structures that would educate the public on the relationship between man and the environment. Environmental education would be there to sensitise the community on a number of health issues

found in the environment and how such environmental issues could be prevented from causing diseases. Based on the findings, environmental education in the Ministry of Health was there but it had not been implemented as expected and it had not been recognized in all establishments and structures of the Ministry of Health, there was a lot that had to be done if the burden of diseases had to be reduced in the country. There was need to take actions to change the lifestyle and behavior of Zambian citizens towards the environment, themselves and other people, and one such action was by incorporating environmental education in the Ministry of Health in Zambia.

6.3 Recommendations

Based on the findings, some priority areas and recommendations can be put forward for the future work in providing quality health to the Zambian people. This research has recommended the following to be considered by the Ministry of Health in a bid to promote health practices to the public.

1. The Ministry of Health should consider incorporating environmental education in all its establishment and structures that would assist in the prevention of diseases from the source. This recommendation is based on the research findings where an overwhelming number of participants (85 percent) felt that the Ministry of Health needed to incorporate environmental education in its establishment and structures.
2. The Ministry of Health should develop a plan for carrying out public awareness by increasing the scope of environmental education and public awareness programme through formal, non-formal and informal environmental education programmes. This is due to the finding that EE could educate every department of the society regardless of people's literacy levels about improper management of industrial, domestic and medical wastes which are often seen as indiscriminate waste discharge or dumping in different parts of the country which was the major cause of environmental degradation leading to a poor environmental health and diseases.
3. In view of the finding that the staff of the MoH went for community outreach educating the public on general cleanliness but people paid little attention to what they were taught, it is recommended that the MoH should come up with interesting activities under the

environmental management strategies that will interest the community to participate in the keeping of our country clean.

4. To foster HiAP, the Ministry of Health should develop partnerships and strengthen collaboration between the health sector, communities, private sector, other government departments and stakeholders that will influence the well-being of Zambians and their communities. This comes from the finding that the MoH created a Directorate of Health Promotion, Environment and Social Determinants of Health, whose mandate was also to foster intersectoral collaboration within the framework of whole government and whole society, buying into the principles of Health in All Policies (HiAP).
5. Based on the finding that EE could educate the health staff about ways in which the environment was important to the operations of the health sector and could educate them on the effects of lack of proper care for their environment and how waste from the health facilities could affect the environment, it is recommended that the MoH should consider training all members of staff in its structures at all levels in the basics of environmental education programmes.

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APPENDICES

Appendix 1: Consent letter

Dear participant,

I am Hector Kunda, a postgraduate student at the University of Zambia conducting a research study on the role of Environmental Education in the transformative agenda of Zambia's Ministry of Health.

Before agreeing to participate in this research, I strongly encourage you to read the explanation of the study. This statement describes the purpose and procedures of the study. Also described is your right to withdraw from the study at any time.

This study is to examine the environmental management strategies that the Ministry of health has been using in providing national health and to establish the role of Environmental Education in the transformative agenda of Zambia's Ministry of Health. Conducting this study involves completion of basic questions about yourself and the specific timing and procedures you may have undergone, and a face to face interview which will last for approximately 45 minutes to one hour. The interview will also be recorded and later transcribed for the purpose of data analysis.

There are no risks or discomforts that are anticipated from your participation in the study. Potential risks or discomforts include possible emotional feelings of sadness when asked questions during the interview. The anticipated benefit of participation in this study is the opportunity to discuss feelings, perceptions, and concerns related to the role Environmental education can play in the transformative agenda of Zambia's Ministry of Health and to contribute to understanding of decision making during policy formulating.

The information gathered during this study will remain confidential in secure premises during this project. Only the researcher will have access to the study data and information. There will not be any identifying names on the interview transcript: they will be coded and the key to the code will be kept locked away. Your names and any other identifying details will never be revealed in any publication of the results of this study. The record will be destroyed at the completion of this study. The results of this research will be published in a professional dissertation or presented at professional meetings. The knowledge obtained from this study will

be of great value in guiding the health sector on how to promote environmental awareness. Participation in this study is voluntary; refusal to participate will involve no penalty. You are free to withdraw consent and discontinue participation in this project at any time without prejudice or penalty. You are also free to refuse to answer any questions I might ask you.

If you agree to participate in this research study, please answer the questions from this interview as best as you can.

Participant's signature.....

Date.....

Appendix 2: An Interview Guide for Health Care Providers on the Role of Environmental Education in the Transformative Agenda of Zambia’s Ministry of Health.

The University of Zambia

School of Education

A: Introduction

This interview is aimed at finding out your opinion concerning incorporation of Environmental Education to health care promotion in the transformative agenda of Zambia’s Ministry of Health and the role it can play to the industry. Defined simply, Environmental Education is all about using education to care for and address health issues of individuals, society and the environment. The state of health depends on the quality of the environment and the quality of environment depends on the state and quality of environmental education among citizens. You are therefore requested to be as objective as you can in view of what you think about the subject matter. Your response will be treated in a very confidential manner because this study is wholly an academic work by the University of Zambia, School of Education to assist in decision making and policy formulation in favour of an improved health care system in Zambia.

B: participant’s Background

1. Date.....
2. Age
3. Gender
4. Highest level of education attained.....
5. Professional Occupation.....

C: Environmental Education information

6. Have you ever heard of Environmental Education before? (To remind you, Environmental Education is different from Environmental Science, Environmental Health or Health Education). Please, tick the appropriate space below: Yes () No ()

7. According to the National Policy on Environment (2007), Environmental Education and awareness needs to be promoted through formal and non-formal education channels by all government institutions. What does this policy direction mean?

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8. Has the Ministry of Health complied with this policy direction?

Yes () No ()

9. If the answer to question 8 above is 'yes', how does it provide Environmental Education to promote health?

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10. If the answer to question 8 above is 'no', why has it not complied to this policy direction by the government of Zambia?.....

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11. What role does your office play in implementing environmental awareness to the public?.....

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.....

D: Environmental Management Strategies used by the MoH to Promote Health in Zambia

12. Have u ever heard of Environmental Management Strategy before?

Yes () No ()

13. Does the Ministry of Health at whatever level (headquarters, 1st level hospitals to 3rd level hospitals) implement an environmental management strategy?

Yes () No ()

14. If the answer to question 13 above is ‘yes’, please give details of the nature of an environmental management strategy being implemented by the MoH.

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15. Do you face any challenges in implementing the stated environmental management strategies? If ‘yes’, give details of the nature of challenges faced.

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E: Transformative agenda of Zambia’s Ministry of Health

16. What new changes is the Ministry of Health using in its transformative agenda to promote health?

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F: Role of Environmental Education in the Ministry of Health.

17. In your view, does the Ministry of Health need to incorporate Environmental Education in its transformative agenda within its establishment and structures?

Yes () No ()

18. If your answer to question 19 is ‘yes’, what would be the role of Environmental Education in the Ministry of Health?

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19. If your answer to question 19 above is ‘no’, give reasons why it should not incorporate Environmental Education in its transformative agenda.

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G: Addition Comments

20. Kindly, what addition views, suggestions or opinions can you make concerning the potential contribution of Environmental Education to the full realisation of Zambian citizens’ right to clean, safe and healthy environment in the ministry of Health?

- Views on Environmental Management strategies used by the Ministry of Health in Zambia.

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- Views on the transformative agenda of Zambia’s Ministry of Health.

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- Views on the role of Environmental Education in the transformative agenda of Zambia's Ministry of Health.

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End of the Interview

Thank you most sincerely, indeed, for participating in this study.

Appendix 3: An Interview Guide for Potential Users of Health Care Services on the Role of Environmental Education in the Transformative Agenda of Zambia's Ministry of Health.

The University of Zambia

School of Education

A: Introduction

This interview is aimed at finding out your opinion concerning incorporation of Environmental Education to health care promotion in the transformative agenda of Zambia's Ministry of Health and the role it can play to the industry. Defined simply, Environmental Education is all about using education to care for and address health issues of individuals, society and the environment. The state of health depends on the quality of the environment and the quality of environment depends on the state and quality of environmental education among citizens. You are therefore requested to be as objective as you can in view of what you think about the subject matter. Your response will be treated in a very confidential manner because this study is wholly an academic work by the University of Zambia, School of Education to assist in decision making and policy formulation in favour of an improved health care system in Zambia.

B: participant's Background

1. Date.....
2. City, town or district of residence.....
3. Professional Occupation.....
4. Highest level of education attained.....
5. Gender.....

C: Environmental Education information

6. Have you ever heard of Environmental Education before? (To remind you, Environmental Education is different from Environmental Science, Environmental Health or Health Education). Please, tick the appropriate space below: Yes () No ()

7. According to the National Policy on Environment (2007), Environmental Education and awareness needs to be promoted through formal and non-formal education channels by all government institutions. What does this policy direction mean?

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8. Has the Ministry of Health complied with this policy direction?

Yes () No ()

9. If the answer to question 8 above is ‘yes’, how does it provide Environmental Education to promote health?

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10. If the answer to question 8 above is ‘no’, why has it not complied to this policy direction by the government of Zambia?.....

.....
.....

D: Environmental Management Strategies used by the MoH to Promote Health in Zambia

11. Does the Ministry of Health at whatever level (headquarters, 1st level hospitals to 3rd level hospitals) implement an environmental management strategy?

Yes () No ()

12. If the answer to question 11 above is ‘yes’, please give details of the nature of an environmental management strategy being implemented by the MoH.

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E: Transformative agenda of Zambia’s Ministry of Health

13. What new changes is the Ministry of Health using in its transformative agenda to promote health?

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F: Role of Environmental Education in the Ministry of Health.

14. In your view, does the Ministry of Health need to incorporate Environmental Education in its transformative agenda within its establishment and structures?

Yes () No ()

15. If your answer to question 14 is ‘yes’, what would be the role of Environmental Education in the Ministry of Health?

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16. If your answer to question 14 above is ‘no’, give reasons why it should not incorporate Environmental Education in its transformative agenda.

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G: Addition Comments

17. Kindly, what addition views, suggestions or opinions can you make concerning the potential contribution of Environmental Education to the full realisation of Zambian citizens' right to clean, safe and healthy environment in the ministry of Health?

- Views on Environmental Management strategies used by the Ministry of Health in Zambia.

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- Views on the transformative agenda of Zambia's Ministry of Health.

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- Views on the role of Environmental Education in the transformative agenda of Zambia's Ministry of Health.

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End of the Interview

Thank you most sincerely, indeed, for participating in this study.

Appendix 4: Observation Guide on the Role of Environmental Education in the Transformative Agenda of Zambia's Ministry of Health.

The University of Zambia

School of Education

A: Introduction

I am Hector Kunda, a post-graduate student at the University of Zambia conducting a research on role of Environmental Education in the transformative agenda of the Ministry of Health. This is purely an academic research for the partial fulfilment of a Master's degree programme in Environmental Education. You have been selected to give information on behalf of your ministry (Ministry of Health). Note that your response will be treated as confidential information and I would be very grateful if you provided honest, detailed and factual responses to the provided questions.

B: Observation guide

S No	Description	Comment
1	Environmental Management Strategies used by MoH to promote national health. • Non-verbal cues • Facial expression • Body movement • Hesitation in answering • Appearance	
2	Role of Environmental Education in the Ministry	

	of Health • Non-verbal cues • Facial expression • Body movement • Hesitation in answering • Verbal behaviour and interactions • Appearance	
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