UNIVERSITY OF NAIROBI
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BOTTOM-UP DESIGN APPROACH: A COMMUNITY-LED INTERVENTION IN FIGHTING LIFESTYLE DISEASES WITHIN URBAN INFORMAL SETTLEMENTS IN NAIROBI, KENYA

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DECLARATION

I declare that this thesis is my original work and has not been submitted elsewhere for examination, award of a degree or publication. Where other people's work or my own work has been used, this has properly been acknowledged and referenced in accordance with the University of Nairobi's requirements.

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DEDICATION

To my dearest *late* beloved ones…forever loved…forever cherished…forever missed.

To my ever loving and supportive family.

To the ‘Cool Docs’

To my mentors in this academic journey.

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LIST OF ACRONYMS/ABBREVIATIONS

BCC – Behaviour Change Communication

CDs – Communicable Diseases

CVDs – Cardiovascular Diseases

CHAs – Community Health Administrators

CHVs – Community Health Volunteers

CUs – Community Units

DT – Design Thinking

FGD – Focus Group

HC – Health Communication

HCD – Human Centered Design

IEC – Information, Education and Communication

IGOs – Inter-Governmental Organizations

LMICs – Low and Middle Income Countries

MoH – Ministry of Health

MNCH – Maternal, Neo-natal and Child Health

NCDs – Non-Communicable Diseases

NGOs – Non-Governmental Organizations

PD – Participatory Design

PH – Public Health

PHC – Primary Health Care

SCHAO – Sub-county Health Administrative Officer

SCCSC – Sub-county Community Strategy Coordinator

SCHPO – Sub-county Health Promotion Officer

SCCO – Sub-county Clinical Officer

TTM – Trans-theoretical Model

WHO – World Health Organization

DEFINITION OF TERMS

1. Non Communicable Diseases (also referred to Lifestyle Diseases): These are diseases or ailments that are non-communicable and caused mainly by sedentary lifestyles.
2. Primordial Prevention: Prevention of disease that is targeted to people who are pre-disposed to NCDs at the level of risk factors exposure.
3. Best buys – These are Public health interventions which are regarded as providing the best cost-effectiveness ration for increasing health status of a population – World Health Organization
4. Top-down Approach: This is the management and organization of an institution or structural unit that has executives or people high in the hierarchy of administration make decisions about how systems run or should work for the people below them
5. Bottom-Up Approach – This is whereby the people at the bottom of a value chain are involved in the design and implementation of systems that are feasible for them as the end users.
6. Level 5 and 6 Hospitals: These are County and National Referral Hospitals as classified by the Ministry of Health offering both Preventive and Curative Services
7. Urban Informal Settlements: These are 'slum' or 'low-income habitats' that are located within urban developments or cities.
8. Community-based interventions: These are solutions that are offered by the community members within a setting to problems faced within their locality. These solutions are based on user-experiences.
9. Co-Design: This is a methodology of co-creating solutions to problems with the end user in mind. The end-user helps identify the problem and offers solutions viable and feasible to them.

ABSTRACT

Health communication programmes in Kenya have mainly used a 'top-down approach' in designing health promotion strategies to be used within communities. This approach has not been sustainable in promoting healthier lifestyles that would potentially stave off Non-Communicable Diseases (NCDs) in these settings. A 'bottom-up approach' of involving communities in decision making about their health choices and what works best for them, is an unexplored area in health promotion programmes in Kenya. A 'bottom-up approach' engages people at the grassroots levels in joint campaigns, causing a behaviour change within their settings and thus influencing an incremental change towards their intended goals.

The rising burden of NCDs is of particular concern in urban informal settlements in Kenya, partly because of lack of awareness and inadequate access to preventive services. This qualitative formative research explored the use of the 'bottom-up approach' as an intervention towards NCDs prevention and management through the engagement of community members. The main objective of this research was to co-design a population-led communication strategy with Community Health Volunteers (CHVs) and relevant health stakeholders that could be used in the prevention and management of NCDs amongst the urban 25-59 year olds living in informal settlements in Kamukunji, Nairobi County.

Using the design thinking methodology that is user-focused, a bottom-up approach was employed by the researcher in engaging relevant health stakeholders in the design process of health promotion programmes. Towards this end, in-depth interviews, open-ended questionnaires, community dialogues, focus group discussions and a co-design workshop were used for data collection from 15 CHVs, 50 Community Members and 6 Sub-county health officials from Kamukunji Sub-county, Nairobi, where this research was conducted.

Findings revealed major challenges faced by the sub-county health officials and CHVs towards health promotion and awareness of NCDs in their community. These included irrelevant and poor health information, education and communication (IEC) material, poor health education and training methods and tools, socio-cultural barriers as well as varied health literacy levels amongst the community members of Kamukunji sub-county. It was observed that the current health promotion programmes used within the community were designed and implemented by the County Government, who were not fully aware of the challenges faced at the grassroots. The key stakeholders involved in this research ratified the need to employ a user-centred approach in designing health promotion programmes towards disease prevention and management.

This research designed a health communication strategy that can frame target-specific health promotion programmes with the end-user in mind. Key benefits of this user-centered research emphasized the importance of co-design in planning health promotion programmes. Co-design of health programmes presents a great opportunity to engage the critical mass of people who are in the communities to adopt appropriate behaviour for health promotion and diseases prevention, as well as appropriate health-seeking behaviour. This in turn would reduce the health-care difficulties in health facilities, which are already struggling to meet demand, and as such give health facilities a chance to be more efficient and effective in health service provision.

KEYWORDS: *Bottom-Up Approach, Co-design, Community Health Volunteers, Health Communication, Health Promotion, Nairobi, Lifestyle Diseases, Kenya, Urban Informal Settlements.*

1.0 CHAPTER ONE: INTRODUCTION

1.1 Introduction

Public health communication campaigns have been credited with promoting awareness about the risk of diseases – both non-communicable and communicable diseases (Guttman et al, 2004). However, how effective these campaigns are, especially in changing health- seeking related attitudes and behaviours, has been a subject of debate.

Health promotion and education is very relevant today in empowering individuals and communities to take action on their health. Health education is about providing health information and knowledge to individuals and communities and providing skills to enable them adopt healthy behaviour voluntarily (Kumar and Preetha, 2012).

Major gaps remain in the prevention and control of Non-communicable diseases (NCDs), commonly and here-in referred to as 'Lifestyle Diseases. The four major risk factors namely unhealthy diets, environmental and household pollution, alcohol and tobacco abuse and physical inactivity are commonly associated with lifestyle diseases acquisition. In the Kenyan health sector, as in many Low-and-Middle Income Countries, the approach to prevention of these chronic ailments is largely unstructured (Achoki, 2019; Ayah et al., 2013).The rising burden of lifestyle diseases is of particular concern among poor communities partly because of lack of awareness and inadequate access to quality health care. These communities have inadequate access to preventive services and have to spend a higher fraction of their income on health-care expenses for lifelong conditions (Oti et al, 2014; Allotey, Devey & Reidpath, 2014).

1.2 Background to the Study

The population structure in Kenya is transitioning, as the fastest growing group in Kenya's population are no longer young children, but adults. The number of adults in Kenya is expected to almost triple in size from 21 million to about 60 million in 2050 (World Bank blog 2015). As such, lifestyles in increasingly urban and globalized environments have led to a steep surge in lifestyle diseases incidence in Low-and-Middle Income Settings (LMICs). A common misconception is that lifestyle diseases, such as diabetes, heart disease, and cancer, primarily affect high-income countries.

Urbanization and modernization have been determined as major contributing factors to the incidence of lifestyle diseases in Kenya. 80% of new reported cases of Cancer and other lifestyle diseases diagnoses in Kenya happen too late in the disease life-cycle, hampering treatment. In part because of changing age structure, and in part because of changing disease conditions, about half of all hospital admissions in Kenya and about one-fourth of all deaths are due to lifestyle diseases. From studies, more than half of all deaths in LMICs are due to lifestyle diseases and about 30% of these deaths occur before the age of 60 (Alwan, 2011). Less than one quarter of the Kenyan population lives in urban and peri-urban areas and slightly more than one quarter of the population is between 30 and 70 years old (WHO Country Profile 2014). Treatment of lifestyle diseases is usually long term and expensive, thus threatening patients' and nations' budgets and putting them at high risk of poverty.

Regular screening and health checks mean one can catch these diseases early and improve chances of reversal or complete healing. While the majority of development assistance goes towards infectious and maternal conditions, there are compelling reasons for LMICs to invest in lifestyle diseases prevention. In sub-Saharan Africa, increases in NCDs prevalence are projected to outpace the reduction of Communicable Diseases (CDs). These estimates have important

economic implications for countries with already strained health resources (Probst-Hensch, 2011). Therefore, low-cost prevention becomes of utmost importance to balance competing health concerns.

Arguably, Public Health (PH) problems call for systemic solutions that encourage change at individual, community and societal levels (Schwartz, 2016). To effectively slow the rise of lifestyle diseases, Kenya must take some bold steps in the next 15 years. *Figure 1* below illustrates the projected incidences of lifestyle diseases by the year 2030 and this clearly shows that if not handled as a matter of urgency, lifestyle diseases prevalence in the country will far outweigh CDs and become a huge burden to the country both in human and financial resources. Fortunately, many lifestyle diseases share the same risk factors and interventions targeting those risk factors can prevent premature mortality from a variety of conditions.

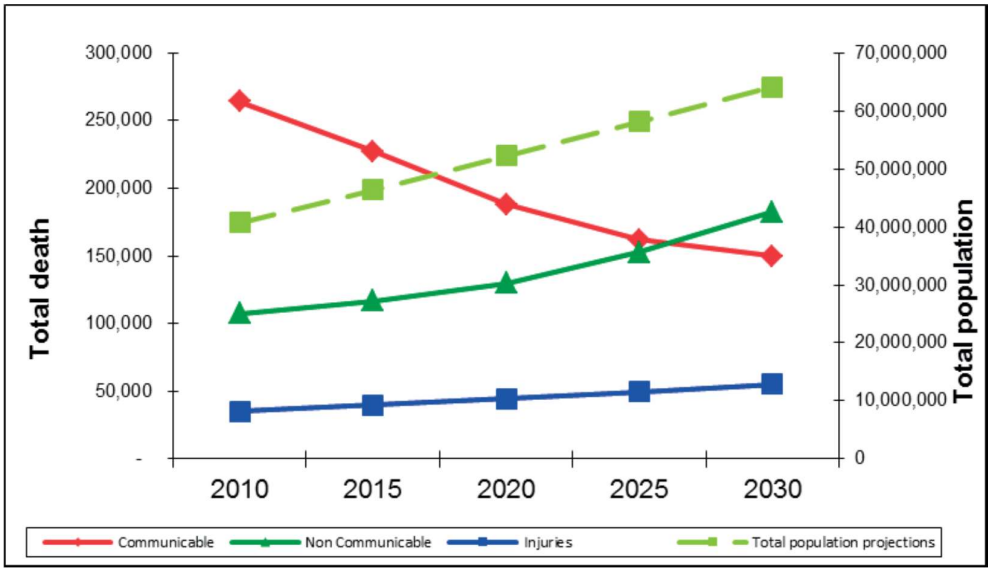


Figure 1.1: Projection of NCDs (Lifestyle Diseases) burden in Kenya 2011- 2030.
Source: Kenya Health Sector Strategic and Investment Plan (KHSSP) July 2014 – June 2018

Limited public awareness and lack of knowledge about lifestyle diseases have been cited as a major influence in the attitudes and practices in the prevention and control of these diseases. (Maina et al, 2010). Low level of knowledge by community members and health care workers has been seen as a major hindrance towards effective health promotion for most chronic lifestyle diseases (Schillinger et al, 2002). Findings from studies done in Kenya by Maina et al 2010 and Haregu et al 2015 revealed that public awareness campaigns through effective communication channels would help bridge the knowledge gap on lifestyle diseases and in turn promote healthier lifestyle choices.

Sensitization programmes, however, have been rolled out by various health stakeholders including the Ministry of Health (MoH) and other Non-Governmental Organizations (NGOs), but have mainly been Primary (early screening) and Secondary (self-management) prevention. Primordial prevention is an avenue that has not been explored towards designing comprehensive programmes towards curbing the prevalence of lifestyle diseases and their associated risk factors (Probst-Hensch et al, 2011). At this point the risk of lifestyle diseases acquisition is reversible and awareness is one of the best preventive measures commonly referred to as best buys.

Health awareness programmes in Kenya have mainly used a *'top-down approach'* in designing health promotion programmes to be used in communities. Though successful to some level, the approach has not been sustainable in the prevention of lifestyle diseases in the community. Often, a *'top-down approach'* is used by public health stakeholders in tackling various health challenges. However, the weakness of this is that the stakeholders may not understand fully the problem on the ground and end up designing interventions that do not offer sustainable solutions in awareness and prevention of lifestyle diseases. Literature gives several examples of programs, often run by governments or large inter-governmental organizations (IGOs); many of which are disease-specific or issue-specific, such

as HIV Control, Malaria Prevention or Polio Eradication (Stewart, Manges, Ward, 2015).

A *'bottom-up approach'* has been suggested in many studies as a way of involving communities in decision making about their health choices and what works best for them. (Stewart et al, 2016). A *'bottom-up approach'* engages people at the grassroots levels in joint health campaigns, in causing a behaviour change within their settings and thus influencing an incremental change towards their intended goals. This usually engages front-liners within their communities, who include community health workers, community elders as well as religious leaders. Joint Communication Programmes towards an all-inclusive and holistic campaign towards lifestyle diseases awareness is an unexplored channel within LMICs. The aim of *'bottom-up approach'* is to increase local access to health at the primary level in communities.

Innovative communication strategies using community-based interventions have come to the limelight as a new approach towards lifestyle diseases prevention and control. Community-based interventions that involve the community in framing and designing health promotion and communication messages have had a major impact in the reduction of lifestyle diseases in LMICs like Indonesia and India (Krishnan et al 2008). The communities in these regions played a role in the design and implementation of the community-based interventions that saw the effectiveness of these interventions as they felt empowered to take care of themselves through behaviour change alongside the uptake of health-seeking services like early screening and disease management.

The *Bottom-up Approach*, also referred to as the Co-design Process in Health Communication Design looks at the inclusion of end-users of a process or intervention in problem-solving of the identified problem. The end-users in most cases are community members within a setting who are involved in identifying problems within their communities and being part of the solution, where their

views and suggestions are incorporated as part of an intervention. For example, Incentive-based programmes alongside mass media campaigns have shown to significantly reduce obesity and lifestyle diseases prevalence in LMICs (Lambert and Kolbe-Alexander, 2013). In South Africa for example, the use of cash transfers to economically disadvantaged populations towards behaviour change and early screening has worked in the uptake of healthy lifestyles, as purely health promotion messages have not been very effective.

Community-based outreach and dialogues have been a new approach to reach individuals within a community. The role of community health workers has been very critical in the dissemination of health information and health referral system within marginalized communities. Ideally, training and mentoring of community health care givers and volunteers within a community ensures continuous advancement in quality health care towards lifestyle disease prevention. According to Centre for Health Solutions (CHS) Kenya, promoting knowledge and capacity of health workers through continuous learning among them makes them competent through providing education on new and developing areas in the field of health promotion programmes within their communities.

In a study done on Female Genital Mutilation (FGM) by UNFPA and UNICEF in 2016, the practice was highly prevalent in the Northern parts of Kenya. Through a campaign dubbed '*Champions of Change'*, the study engaged community health workers in driving a campaign towards the taming of this practice. The community members who included men, women, circumcisers and religious leaders were jointly gathered together and educated on the demerits of this practice. Through the campaign, the various agents were provided with information that allowed shifts in attitudes towards curbing FGM. Programmatic interventions based on readiness of the community allowed members to adapt to the new norm of discouraging FGM and instead sought other modes of initiating young girls into adulthood.

1.3 Research Case Study: California Ward, Kamukunji Sub-County

1.3.1 Situational Analysis: Incidence of Lifestyle Diseases

Guided by secondary data received from Biafra Lion's Clinic, the Nairobi county-owned health facility in Kamukunji sub-county, California Ward, the researcher was able to establish the incidence of lifestyle diseases in the locality. Despite admitting poor recording of cases on lifestyle disease, the health officers were able to share reported cases of lifestyle diseases at the health facility in the last two quarters of the year 2017, within which this research was conducted. The health officers mentioned that many cases went unreported or unrecorded because many patients opted for or visited other private hospitals within the sub-county. This was attributed to the fact that the health facility was ill-equipped to treat and manage a majority of lifestyle diseases and the best they could do was offer first-aid and thereafter refer them to Level 5 & 6 Hospitals.

The *Table 1.1* below is a summary of the data records received from the officer as recorded by the public health facilities in Kamukunji Sub-County. As indicated, the major lifestyle diseases reported in the area were Cervical Cancer, Hypertension, Mental Illnesses and Injuries - which are also now classified as lifestyle diseases, according to WHO 2015. The table also highlights extents where *No Data* (ND) was recorded on Cancer patients despite offhandedly mentioned cases of the same by community members and health workers within the sub-county.

Column 3 on *Table 1.1* shows the number of persons that were eligible for outreach on awareness programmes and health education on lifestyle diseases, with Column 4 indicating the baseline population they intended to reach and Column 5 illustrating the target population they were able to reach. As indicated, the health facilities within Kamukunji were able to reach their target in regards to cervical cancer screening only, but were unable to do the same on mental illnesses and high

blood pressure (HBP). In the occurrence of Cancer and deaths caused by injuries, *No Data* (ND) was available. Conclusively, the data entry on lifestyle diseases in this area was sparse and inadequate and thus surveillance on the prevalence on these diseases in Kamukunji Sub-county was considered a huge challenge in the fight against this burden of disease.

Table 1.1: Reported Data on Prevalence of NCDs in Kamukunji Sub-county
Source: Kamukunji Sub-County Health Data Surveillance Team

S/no	Indicator	Eligible pop	Baseline	Target	Jul - Dec 2017		
					Q1	Q2	Total Q1+Q2
1	Women of reproductive age screened for cervical cancer	99487	1122	1234	107	75	182
2	Patients diagnosed with cancer (Hospitals)	ND	ND	ND	ND	ND	ND
3	# of new outpatients with mental health conditions	42499	45	44	24	40	64
4	# of new outpatients with high blood pressure	42499	2091	2049	853	741	1594
5	Deaths at health facility due to injuries (*Hospitals)*	ND	ND	ND	ND	ND	ND

Poorly administered health promotion activities in the area in recent times, especially towards lifestyle diseases awareness was revealed by the health officers as one of the major challenges within the Kamukunji community towards disease prevention. Concentration on disease prevention and management was more focused on communicable diseases and maternal, neonatal and child health services (MNCH). However this was attributed to the fact that these categories of health had for a long time been the most prevalent in the locality, and thus the concentration on them. However, the health officers noted that these had gone down greatly and the new challenge the sub-county was now facing was the increase in lifestyle diseases incidence. Limited awareness on lifestyle diseases was highlighted as a huge challenge in health promotion of the same.

Health promotion programmes sponsored by the county government were minimal, if any, and thus the sub-county heavily relied on private funders to help them create awareness programmes on lifestyle diseases prevention and management. The officer mentioned irregular Cancer and HBP screening campaigns funded by Non-Governmental Organizations (NGOs) were conducted; and these privately-funded health drives were the most frequently used way of reaching out to the community in regard to educating the masses on lifestyle choices. It was also noted that despite the sub-county putting awareness programmes and community health (classified under Public Health) drives as part of their annual health budget (in their Annual Development Plan - ADP), the county government did not fund or approve as it had no money allocated towards this cause. Critical to note however was the role the community health volunteers played in mobilizing and educating the community members on health matters, but this was pegged on availability of resources, both human and material, alongside improved training methods.

As appreciated from literature, a cost-effective and feasible preventive action for lifestyle diseases in Kenya that will avert potentially catastrophic costs through primordial prevention is the most viable approach. As such, this research aimed at

co-designing a population-led communication strategy with communities in urban informal settlements that would assist in sustainable health promotion towards the prevention and reduction of incidences of lifestyle diseases within informal settlements in Kenya.

1.4 Problem Statement

Low levels of lifestyle diseases knowledge compounded by lack of resources has been a major hindrance towards effective health promotion towards the decrease of these diseases, especially in urban informal settlements in Kenya. Additionally, the role of Community Health Volunteers whose role as health information disseminators through health officials has also not been extensively used toward awareness of lifestyle diseases prevention and management.

The inefficiency in knowledge on lifestyle diseases is exacerbated by the current health promotion strategies that are top-down heavy, an approach that has not been sustainable in promoting healthier lifestyles that would potentially reduce the incidence of lifestyle diseases in these settings. As such a restructuring of the current health promotion approach is essential in the design of health promotion and communication strategies that fit the end-user profiles A *'bottom-up approach'* of involving communities in decision making about their health is an area that can be explored towards lifestyle diseases awareness as well as prevention and management methods.

The involvement of communities through CHVs, who are potential key gatekeepers in the public health care system, is an approach that can be taken up as an intervention system for lifestyle diseases prevention in urban informal settlements in Kenya. Having the CHVs involved in the design of key programme strategies revolving around health education, community dialogue and public commitment towards behavior change in LMICs settings, through the bottom-up approach, could be an avenue towards lifestyle diseases prevention and

management. Focus on these potential key gatekeepers who uphold their communities' views and beliefs, whilst engaging them in aggressive health promotion activities could carry great weight within their community settings.

1.5 Main Objective

To co-design a community-led communication strategy through a bottom-up design approach with CHVs and relevant healthcare stakeholders that can be used in the prevention and control of NCDs amongst the urban 25-59 year olds living in urban informal settlements in Kamukunji sub-county, Nairobi, Kenya.

1.5.1. Specific Objectives

1. To investigate how community members in California Ward, Kamukunji sub-county are encouraged by the community health volunteers to maintain healthy lifestyles.
2. To establish the level of knowledge on lifestyle diseases of community health volunteers within California Ward, Kamukunji sub-county.
3. To explore existing health communication channels, synthesizing them with new proposed channels in the prevention and management of lifestyle diseases in California Ward, Kamukunji sub-county.
4. To develop a population-led health communication framework through a co-design intervention in California Ward, Kamukunji sub-county.

1.6 Main Research Question

How can a user-focused, bottom-up design approach be employed to develop a population-led communication strategy towards the prevention and control of lifestyle diseases amongst the urban 25-59 year olds living in urban informal settlements in Kamukunji sub-county, Nairobi?

1.6.1 Specific Research Questions

1. What activities are community members of Kamukunji sub-county encouraged to engage in by the healthcare workers towards maintaining healthy lifestyles?
2. How well are the community health volunteers within Kamukunji sub-county informed about lifestyle diseases; what training methods are they exposed to towards this knowledge acquisition?
3. What health communication channels are the community members of Kamukunji sub-county exposed to on NCDs; what new channels would they prefer?
4. How can co-design be used in developing a community-led communication strategy to be used in designing health programmes towards prevention and management of lifestyle diseases?

1.7 Justification of the Study

Top-down approaches in the healthcare sector by government agencies have failed to deliver viable and updated technology towards modernized health systems. Health promotion programmes are still functioning with outdated technology like print media, word of mouth through hospital visits and household visits of community members. As such 'disruptive' innovation must come from the ground bridging the 'information gap' between healthcare front-liners and the community through a user-centered design approach.

Methods and principles of design and in particular user-centered design has increasingly been seen as providing a strategy for health services innovation and improvement (Bowen et al., 2013). From studies, stakeholders' participation has been shown to be a beneficial component of human centered design, leading to innovative ideas towards health promotion strategies.

This research proposed a design intervention seeking to promote a user-led approach that will help reduce the incidence of lifestyle diseases through the design of a community-led communication strategy towards the promotion of healthy lifestyle choices. This was done with the involvement of the stakeholders who were part of the health care system and who were the beneficiaries of this research. The proposed community-led communication strategy would be used by the health officers and the CHVs in designing efficient health promotion programmes towards the fight of lifestyle diseases.

1.8 Significance of the Study

Future projections suggest that if policy directions and interventions that give more emphasis on CDs are sustained, overall mortality will reduce by 48% for CDs but a 55% increase in deaths due to lifestyle diseases (NCDs). Thus it is very critical that measures are put in place to control the prevalence of this burden of disease (Schwartz, 2016). This research proposes a design-led human-centred solution towards this public health issue. Through the proposed framework, persons involved in the design of communication material towards health promotion will put together relevant information and communication material towards disease prevention. People targeted to benefit from this research include health practitioners, health promotion experts, healthcare workers and policy makers.

1.9 Scope of the Study

This research was carried out in one of the most populous sub-counties in Nairobi, Kamukunji Sub County. The study population (aged 25 – 59 years) mainly from the informal settlements of California Ward, were indulged in this research alongside Health Practitioners from the County and Sub-county, Community Health Administrators (CHAs) and Community Health Workers (now referred to as Community Health Volunteers - CHVs).

The research covered two community units - Motherland and Eastleigh South. The area has slightly over 50,000 households covered by about 38 CHVs. The Biafra Lions' Health Clinic, which is Nairobi county-owned provides health services to the locals in this area.

2.0 CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter examines the background of lifestyle diseases – medically termed Non-Communicable Diseases (NCDs) and their prevalence both globally and in Kenya with particular interest to urban informal settlements. The literature discussed tackles the definition of NCDs (interchangeably referred to as Lifestyle Diseases) and their risk factors, their social and economic impacts on society, roles of various public health stakeholders, and the role design and communication has played towards preventive measures in different contexts in curbing the prevalence of lifestyle diseases. Research and knowledge gaps and suggestions for further research on effective preventive measures from numerous studies have also been identified and discussed. The chapter ends with a proposal on how these gaps can be resolved through research.

Several search databases were used to identify relevant literature which included Pubmed, Medline, Popline, Google and Google Scholar. Other documents reviewed included government policy documents and publications from the Ministry of Health of Kenya (MoH) and Non-Governmental Organizations (NGOs). Journal articles, including those listed in references of retrieved articles, gray literature and press releases from local Kenyan media and a number of health-related websites were also appraised.

2.2 Research Gap

The increasing prevalence of NCDs in LMICs is a big challenge to governments, which are all still struggling with a myriad of communicable diseases (CDs) like Tuberculosis, HIV/AIDS and Malaria (Amuyunzu-Nyamongo, 2010; Bongaarts et al, 2009; Oti et al 2013). Historically, CDs have dominated public health concerns in LMICs. Recent studies show that NCDs in Kenya constitute a high cause of deaths with about 4 of every 10 adult deaths caused by NCDs (Phillips-Howard,

2014). Even with the Kenyan government making NCDs a national health priority, a higher fraction of the health budget is still allocated to acute CDs. The Ministry of Health (MoH) Kenya has on several occasions admitted to not effectively tackling this burden of NCDs solely, and has indicated that all state and non-state actors should work together to reduce the increased prevalence of these diseases. According to Dr. Joseph Kibachio, Head of NCDs Division at MoH, low awareness, poverty and lack of multi-sectoral engagement to tackle these problem-diseases has impeded the management of NCDS.

'With health care systems, as Ministry of Health, we cannot pretend to be able to sort all the problems, so we require the private companies and private equity to inject their capital as they build their businesses….many people in Kenya are suffering from NCDs but are not aware….as such there is a huge opportunity for these private companies to invest in activities right from awareness, prevention, palliative care…and we welcome anyone to come partner with the Ministry towards this cause in improving the quality of life of Kenyans.

- *Dr. Joseph Kibachio, Head of NCDs Division, MoH – 17th Feb 2016*

Major gaps remain in the control of the NCDs' risk factors like unhealthy diets, environmental and household pollution and physical inactivity. In the Kenyan health sector, as in many LMICs, the approach to prevention of these chronic ailments is largely unstructured (Kiarie, 2016). The rising burden of NCDs is of particular concern among poor communities partly because of lack of awareness and limited access to quality health care. These communities have inadequate access to preventive and curative services and have to spend a higher fraction of their income on health-care expenses for lifelong conditions (Oti et al., 2014).

Awareness programmes have not been explored aggressively to help tame the prevalence of this burden of disease. Poorly designed health promotion programmes have been partly blamed for this. In this regard, WHO has in its part proposed and recommended interventions for NCDs risk factors based on impact,

cost-effectiveness, feasibility and sustainability labeled as 'best-buys' (WHO 2014).

Six critical building blocks for a well-functioning health system have been identified as a guide to help solve the problem of lifestyle diseases (WHO 2010). These include proper service delivery, human resources for health, medical products, health systems strengthening, health financing and leadership and governance. A study done in Nairobi, Coast, Central and Eastern provinces in Kenya in 2012 showed that strengthening of leadership and management skills of health workers through a population-based approach significantly improved health care outcomes in these regions (Siems et al., 2012). The study argued that empowerment and proper training of health workers may be useful to strengthen the health system and in turn improve the health outcomes of vulnerable and disadvantaged populations in a community.

Community Health Volunteers (CHVs) have been identified as a very critical group in raising awareness on various health issues within their communities. However, their roles as '*human resources for health'* and *'health systems strengtheners'* have not been fully exploited in the avenue of effective health promotion activities towards NCDs prevention. Having the CHVs involved in key programme strategies revolving around health education, community dialogue and public commitment towards behavior change in LMICs settings could be an avenue towards NCDs prevention and management. Focus on these key gatekeepers who uphold their communities' views and beliefs, whilst engaging them in aggressive health promotion activities could carry great weight within their community settings.

2.3 Background on Non-Communicable Diseases (NCDs)

2.3.1. Non-Communicable Diseases Defined

A Non-communicable disease (NCD) is a medical condition or disease that is non-infectious or non-transmissible. NCDs, commonly referred to as lifestyle diseases, are chronic diseases which last for long periods of time and progress slowly. The four main types of lifestyle diseases are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes (WHO 2015). Although lifestyle diseases have for a long time been associated with older age groups, evidence shows that 16 million of all deaths attributed to them occur before the age of 70. Of these premature deaths, 82 per cent occurred in low and middle income countries (LMICs).

> *"The rise of chronic non-communicable diseases presents an enormous challenge. For some countries, it is no exaggeration to describe the situation as an impending disaster for health, society and national economies"*
>
> – *Dr. Margaret Chan, WHO Director-General,*
> *(Global Forum NCD, 2011)*

Countries' economies are being stifled by the increase of lifestyle diseases in their management and cure and alternative measures need to be put in place to curb this. Lifestyle diseases have become a burden to national growth and development of countries especially the LMICs, and a solution needs to be offered towards solving this crisis.

2.3.2. Risk Factors associated with Lifestyle Diseases

The Centre for Disease Control and Prevention defines a risk factor as *"an aspect of personal behaviour or lifestyle, an environmental exposure or a hereditary*

characteristic that is associated with an increase in the occurrence of a particular disease, injury or other health condition''. (Centre for Disease Control and Prevention – CDC, 2006). Various risk factors ranging from Modifiable risk factors, Metabolic Risk factors and Environmental risk factors have been identified in the increased likelihood of certain lifestyle diseases. Factors such as a person's lifestyle, background and environment – including gender, age, air pollutants and sedentary lifestyles have been shown to lead occurrence of lifestyle diseases such as hypertension and obesity.

a) Modifiable Behavioural Risk Factors

These risk factors are behavioural and can be prevented with change in behaviour and in turn reverse the chances of being pre-disposed to lifestyle diseases. These include tobacco use, lack of physical activity, unhealthy diets and abuse of alcohol. Statistics show that each of these risk factors contribute to a large percentage of annual deaths with tobacco use leading followed by harmful drinking, physical inactivity and obesity as the fourth risk factor. It has been projected that if these risk factors are eliminated, up to 80 per cent of lifestyle diseases cases associated to them could be prevented. (Lim et al., 2012). Interventions such as effective health promotion programmes targeting these risk factors, could reduce this disease burden with efforts focused on healthy lifestyles (mainly healthy diets and physical activity).

b) Metabolic or Physiological Risk Factors

These refers to the biochemical processes involved in the body's normal functioning and are caused by modifiable risk factors. They include; raised blood pressure. Raised total cholesterol, elevated glucose levels and overweight and obesity (WHO, 2002).

c) Non-Modifiable Risk Factors

These are risk factors that cannot be reduced or controlled by interventions. These include age, gender, race and family history or genetics (WHO, 2002).

2.3.3 Social and Economic impacts of Lifestyle Diseases

Historically, many lifestyle diseases were associated with economic development and thus labelled 'diseases for the rich'. However over the years this burden of disease in LMICs has increased and lifestyle diseases can no longer be considered a disease of the affluent. Additionally treatment options for lifestyle diseases are very expensive with a very small fraction of people within these LMICs able to afford treatment. This in turn has led to economic strain in affected households and equally to a country's economy.

> *"About 30 per cent of people dying from Non-communicable diseases in Low and Middle Income Countries are under 60 years and in their most productive period of life. These premature deaths are largely preventable. This is a great loss at individual level, household level and for the country's workforce……. Poverty contributes to NCDs and NCDs contribute to poverty. Unless the epidemic of NCDs is aggressively confronted, the global goal of reducing poverty will be difficult to achieve"*
>
> *– Dr. Ala Alwan,*
> *WHO Assistant Director for Non- Communicable Diseases.*
> *(WHO Media Release, 2011)*

Knowledge of risk factor trends provides a more complete picture of the epidemiological transitions as well as lessons for how the risk factors can be reduced and managed in countries at all levels of economic development, with the use of various preventive strategies (Ezzatti and Riboli, 2013). Addressing the risk factors associated with lifestyle diseases may present a cheaper and long-term

solution to the problem of rising cases in Kenya. Effective prevention methods that address especially the modifiable risk factors are preferable (Mwai and Muriithi, 2015).

2.4 Impact of Lifestyle Diseases in LMICs

Lifestyle diseases are the leading cause of death globally representing 63 per cent of all annual deaths (Abegunde et al.,, 2007). Almost three quarters of these deaths occur in low and middle income countries (LMICs) like Kenya. According to the *Kenya STEPwise survey for NCDs Risk Factors 2015*, lifestyle diseases account for more than 50 per cent of hospital admissions and over 55 per cent of all deaths in Kenya. This increasing epidemic of lifestyle diseases has several root causes. Decreases in communicable diseases (CDs), which mainly affect children, has led to higher survival rates into adult generation. This change in demographic profile has been documented as influencing the future incidence of lifestyle diseases in LMICs in Africa, including Kenya (Dalal et al., 2011). Other drivers of this epidemic are urbanization and changes in lifestyle associated with advanced economic development (Adeyi et al, 2007).

Kenya is a rapidly developing country. of sub-Saharan Africa, where the extent of most cardiovascular diseases (CVDs) and the associated risk factors at population level remain largely unknown. Chronic diseases have not received much attention due to overemphasis on communicable diseases, underreporting, missed diagnosis, misdiagnosis, and misclassification of diseases. According to the *Ministry of Health Annual Status Report 2007*, the leading causes of deaths in Kenya are malaria, pneumonia, HIV/AIDS, diarrhoea, anaemia, tuberculosis, meningitis, and heart failure. However NCDs contribute over one-half of the top 20 causes of morbidity and mortality. Total mortality attributed to NCDs rose from 31.8% in 2002 to 33% in 2007. This has been attributed to urbanization that brings with it changes in lifestyle that adversely affect metabolism (Kaduka et al., 2012).

Poor dietary habits and physical inactivity have been identified as key risk factors to almost all NCDs (Unwin et al., 2011). As a result of increased production of processed foods, rapid urbanization and improved lifestyles, Kenyans have changed their food preference and eating habits to accommodate unhealthy diets high in fats, sugar and salt but low in fibre. Physical activity has also reduced with more people reliant on private and public transport and limiting exercise and physical fitness. This change in lifestyle has seen a rapid disease burden of NCDs, with Kenyans now spending billions of shillings in treating NCDs, with those who can afford going abroad for specialized treatment. As a result, NCDs in the country threatens to overwhelm an already over-stretched and largely underfunded health sector.

Adoption of western lifestyles has led many Kenyans especially those in urban areas, to the consumption of high salt and sodium diets alongside fatty foods. The number of deaths from lifestyle diseases especially among the urban young population (aged 25 – 59 years) has been on the increase with the most reported deaths being from cardiovascular disease, which health practitioners have linked to sedentary lifestyles. This is quite alarming considering that lifestyle diseases have for the longest time been termed as a disease for the older and richer population. With the increase in death of these age group (who are labelled to be the 'healthy working' population in a country) it is now necessary to look at measures of preventing the prevalence of lifestyle diseases amongst this cohort.

Surveillance and monitoring of lifestyle diseases can be difficult because of delay time between exposure and health condition (there is no set time for an NCD occurrence in an individual) as well as more than one exposure for a health condition leading to another condition (Finck et al., 2013). Thus the solution is interventions that target risk factors to prevent disease. One key measure that has not been widely and sufficiently explored is health promotion through effective communication and information transmission. NCDs risk factors are country

specific and require country specific studies and interventions (Ezzati and Riboli, 2013). Most health communication materials and information are not targeted towards prevention of lifestyle disease and more so advocating for a healthy lifestyle. Communication material available in Kenya is mainly focused around Disease Management and Curative Services for NCDs (World Bank Group, 2014).

One of the government's key strategic objectives towards fighting NCDs is Strategic Objective 3 – *'To promote healthy lifestyles and implement interventions to reduce the modifiable risk factors for Non-Communicable Diseases'* (Kenya National Strategy for NCDs 2015-2020 – P.38). Proposals of using evidence-based cost effective approaches to reducing risk factors for lifestyle diseases have been suggested, but are yet to be identified or implemented. Government has proposed a framework towards the prevention and control of lifestyle diseases that looks at Primordial Prevention, Primordial and Primary Prevention, Primary Prevention, Secondary Prevention and Tertiary Prevention. This strategic objective however has identified several bottlenecks of lifestyle diseases prevention and control. One of these is the lack of resources for public health initiatives for awareness and promotion of healthy lifestyles in prevention of lifestyle diseases. As such government has called for partners towards this initiative, who are multi sectoral and not only from the health sector. One of the suggested approaches is looking at the Information, Education and Communication (IEC) material to be developed as well as awareness activities effective towards this cause.

2.5. Prevalence of NCDs in Kenya

2.5.1. Communicable Diseases vs. Lifestyle Diseases: Trends and Effects

The increasing prevalence of lifestyle diseases in LMICs is a big challenge to the governments, which are all still struggling with a myriad of communicable diseases (CDs) like Tuberculosis, HIV/AIDS and Malaria (Amuyunzu-Nyamongo, 2010). Research further shows that changes in dietary patterns and nutrient intakes occur

when populations adapt modern lifestyles during economic and social development as well urbanization.

Global projections show that lifestyle diseases mortality will continue to increase in developing countries while communicable diseases will decrease. This can be attributed to the huge investments in HIV prevention, treatment and control programmes in Kenya (Bongaarts, 2009; Oti et al, 2013). The declining trends in communicable disease mortality among adults are largely driven by reductions in AIDS and Tuberculosis (TB) mortality over time. This has led to longevity of life which in turn has seen an upsurge in the burden of lifestyle diseases. As such long term measures in terms of prevention of lifestyle diseases needs to be addressed as a matter of urgency.

2.5.2. Behavioural and Dietary Risk Factors

The determinants of lifestyle diseases encompass individual and societal level factors and the general socio-economic, cultural and environmental conditions (Amuyunzu-Nyamongo, 2010). Research has shown that several factors determine any of the four major lifestyle diseases in Africa and thus it is crucial to ensure that the main risk factors, shared amongst these lifestyle diseases are addressed to help curb prevalence of these conditions. For example behavioural and dietary risk factors such as lack of physical activity (PA) and obesity or malnutrition are associated with diabetes and cardiovascular diseases.

Tackling a single risk factor therefore would not achieve very good results as opposed to tackling co-related risk factors. This is evidenced by a research by Haregu et al (2015) that sought to determine the prevalence of co-occurrence of the four common lifestyle diseases risk factors among urban dwellers in Nairobi Kenya. Unhealthy diets and insufficient physical activity presented to be very high amongst the participants with most being pre-disposed to at least two risk factors.

With this background, multiple behavioural risk factors should be considered when planning prevention programmes.

2.5.3. Research Activity and Data Surveillance

Kenya is a rapidly developing country of Sub Saharan Africa where the extent of most lifestyle diseases and associated risk factors at population level remain largely unknown. Chronic diseases have not received much attention due to over-emphasis on CDs, underreporting, missed diagnosis, misdiagnosis and misclassification of diseases (Kaduka et al, 2012). However, lifestyle diseases contribute to the top 20 causes of morbidity and mortality in Kenya.

The *NCDs Progress Monitor 2015*, shows that the data on lifestyle diseases mortality and its prevalence in Kenya is unavailable. Instead a poor surveillance system and a lack of risk factor survey database is reported. An accurate and updated data surveillance system towards spread of lifestyle diseases in Kenya will help create awareness among Kenyan policy makers and planners on the health status of the Kenyan urban population in respect to lifestyle diseases and its incidence amongst the population.

2.6. Policies and Practices towards NCDs Prevention and Management

2.6.1 Global Framework and Multi-Stakeholder Policies

In the year 2011, under the leadership of WHO, more than 190 countries agreed to reduce the lifestyle diseases burden by endorsing the *'Global Action Plan for the Prevention and Control of NCDs 2013-2020'.* The plan aims to reduce the number of premature deaths from lifestyle diseases by 25 per cent by 2025. However, current guidelines for lifestyle diseases and its associated risk factors are largely limited to treatment (Valluri and Ganziano, 2013). There is a lack of guidelines purely dedicated to prevention and management. It is also good to note that most

of the guidelines set for Sub Saharan Africa and LMICs have been focused on communicable diseases such as HIV/AIDs.

Responding to the global burden of chronic disease requires assessment of the processes that are likely to be the most effective in encouraging effective prevention policies at country level and in influencing industry behaviour (Magnusson, 2007). As such, lifestyle diseases need effective strategies that address prevention at the population level, with main target being primordial and primary prevention (directed at high risk groups).

2.6.2. Public Health Systems Strengthening

Kenya like most developing countries is facing a double burden of CDs and NCDs. Future projections indicate that if policy directions and interventions that give emphasis on communicable diseases are sustained, mortality will reduce by 360,000 persons (14%) annually by 2030. However this translates to 48 per cent reduction in deaths due to communicable disease but 55 per cent increase due to lifestyle diseases (Anyona, 2014). In this context, Kenya has come up with the *Kenya National Strategy for Non-communicable Diseases 2015-2020* document that establishes a framework for reducing morbidity and mortality from lifestyle diseases. Through this research, reducing lifestyle diseases and their main behavioural risk factors will increase population well-being, and in turn promote economic and social development and reduce health expenditure at individual, household and national levels.

2.7. Health Education for Health Promotion

2.7.1 Knowledge, Attitudes and Practices

African states face a myriad of barriers and challenges towards health promotion strategies and intervention programmes in disease prevention and control. Health care professionals have always practiced their professions in a three-fold objective;

curing, caring and preventing (Govender, 2005). One major barrier in effective health promotion is health literacy. WHO (2000) defines health literacy as *'the cognitive and social skills that determine the motivation and ability of individuals to gain access to understand and use information in ways which promote and maintain good health'*. Health literacy involves the understanding and ability to judge, sift and use information provided in the context of one's own life (Nutbeam, 2001).

Health researchers and stakeholders globally have long been concerned about the link between health and education. Education and literacy rank as key determinants of health, along with income, employment, living and working conditions and social environment (Kickbusch, 2001). Poor health literacy is a particularly important barrier to chronic disease care and management. Patients with poor health literacy levels have difficulties that range from reading labels on a pill bottle, to comprehending appointment slips and reading Information, Educational and Communication (IEC) material (Schilinger et al., 2002).

2.7.2 Health Literacy and its effects on information dissemination

Health promotion and education is very relevant today in empowering individuals and communities to take action on their health. Health education is about providing health information and knowledge to individuals and communities and providing skills to enable them adopt healthy behaviour voluntarily (Kumar and Preetha, 2012). Some major factors that have affected effective awareness and access to health education to communities include; irrelevant content of Information, Education and Communication (IEC) material; conflicting health education messages; messages with language barriers and messages not considering religious and cultural beliefs (Parker et al,.2012; Govender, 2014).

One such study done in four major cities in Kenya revealed a serious deficiency in knowledge of diabetes among community members. The findings reflected on the

extent of health promotion for most chronic lifestyle diseases. There was a general lack of knowledge about the importance of living a healthy lifestyle that involved healthy diets, physical activity and improved health-seeking behaviour (Maina et al., 2010). This lack of knowledge was due to limited literacy levels (the IEC material did not make much sense to them), as well as lack of exposure to awareness campaigns. Going by this, it is important to identify interventions that reinforce people's attitudes despite their levels of knowledge of a particular subject.

Public health messages and health care system interventions should target people with poor health literacy. Information should be based on a deeper understanding of the needs and competencies of persons with poor health literacy (Smith-Greenaway, 2015).

2.8. Health Communication for disease prevention and management

2.8.1 Health Communication Campaigns

Communication Campaigns may be defined as strategically planned communication and marketing activities, channeled at a set of identified population, for a pre-determined period of time, with a purpose of achieving a defined goal (Friedman et al., 2016). Health Communication (HC) and Social Marketing (SM) can influence structural interventions and effectively promote disease prevention when strategically designed, implemented and evaluated.

Health Communication has been shown to increase the intended audience's knowledge and awareness of health issues, problems or solutions (Freimuth and Quinn, 2004). Health Communication can also influence perceptions, beliefs and attitudes that may change social norms, prompting action towards behaviour change, whilst refuting myths and misconceptions. Public health communication campaigns have been credited with promoting awareness about the risk of diseases

– both chronic illnesses and infectious diseases (Guttman et al., 2004). However, how effective these campaigns are, especially in changing health-related attitudes and behaviours, has been a subject of debate. Several studies have been conducted around the effectiveness of various channels of mass media campaigns in the promotion of Public Health (Noar, 2006).

2.8.2. Principles of Effective Health Campaigns Design

Principles of effective campaign design are critical in putting together a targeted, well executed health campaign strategy. In health education and communication, studies have shown that tailored communication materials are generally more effective than non-tailored ones in helping individuals change health-related behaviours such as smoking, diet, physical activity, cancer and cholesterol screening and in turn can enhance participation in health promotion programs (Hawkins et al., 2008; Kreuter et al., 2000; Lang, 2006; Searl et al., 2010). *'Tailoring'* has been defined as creating communication in which information about an individual is used to determine what specific content he or she will receive, the context within which the content lies and the mode of presentation of the intended message i.e. the media channel(s).

Tailored communication produces a message matched to the needs and preferences of individuals and this is very critical in designing health communication material. Content matching, often thought of as the essence of tailoring, attempts to direct messages to individuals' status on key theoretical determinants - knowledge, outcome expectation, beliefs and self-efficacy (Hawkins et al., 2008). With this background, health communication campaigns should focus more on influencing proximal variables such as social norms, to bring about long-term behaviour change (Cavill and Bauman, 2004).

Health information is now more readily accessible to the public through mass media unlike traditionally where it was only available to health professionals.

Consequently, the public now navigates through lots of health material and information channels on their own, with limited knowledge on how to evaluate the information received (Cusack et al., 2016). Knowing this, it is now critical to design and adapt educational material and interventions that are aimed at improving people's ability to evaluate and access relevant and evidence-based health information that will positively influence their decision making when it comes to lifestyle choices in regard to healthy diets and physical activity (as in the case of lifestyle diseases).

2.8.3. Designing Health Communication Strategies

Well organized campaigns can have a positive effect on behaviour and more so targeted mass media campaigns have been used to inform patients and the public, often in promoting specific health behaviours or patterns of health service use (Coulter and Ellins, 2007).Creating an effective health communication strategy, specifically directed towards behaviour change, takes several things into consideration. Some of these include; the intended goal of the message; the target market of the message; the communication channel/medium that will carry the message and the motivational and personal relevance of the main information in the message.

Both structural and content elements of messages determine how well messages are encoded, stored and retrieved at a decision point (Lang 2006). Intended audiences need high quality information if they are to make informed decisions about their health (Griffin et al., 2003).

2.8.4. Message Design and Delivery

Advances in communication technologies have dramatically changed how individuals access information and communication. As the use of newer communication technologies continues to increase, health promotion has inevitably expanded from the 'old' media (Television, Radio, Billboards and Print

media) into the 'new' media (mobile phones and social networking sites). Recent reviews for example have shown the effectiveness of short message services (SMS) in successful promotion of behaviour change within a short period (one year or less), for several behaviours including smoking, diet and physical inactivity (Gold 2010; Gurman 2012).

Alongside content, ethical issues are an essential component in the development and application of public health communication strategies (Guttman & Salmon 2004). Issues such as 'tailored' messages, informed consent of the target audience, use of persuasive communication tactics, messages on responsibility and harm reduction among others need to be considered and thoroughly vetted. This can be attributed to the fact that there is a potential effect of public health communication interventions on individuals and society as a whole and as such responsible communication strategies need to be adopted.

2.8.5 Bottom-Up Approach in the Design Process

The bottom-up approach in the design process involves engaging the end-user(s) of the design intervention in the decision-making about the said strategy or solution and in the choice of how to go about working on this solution. The *European LEADER Association for Rural Development* (ELARD 2017) defines the bottom-up approach as **"***The means that local actors participate in decision-making about the strategy and in the selection of the priorities to be pursued in their local area"*

The bottom-up approach allows the local community and local players to express their views and to help define the development course for their area in line with their own views, expectations and plans (European Commission [EC] n.d.).

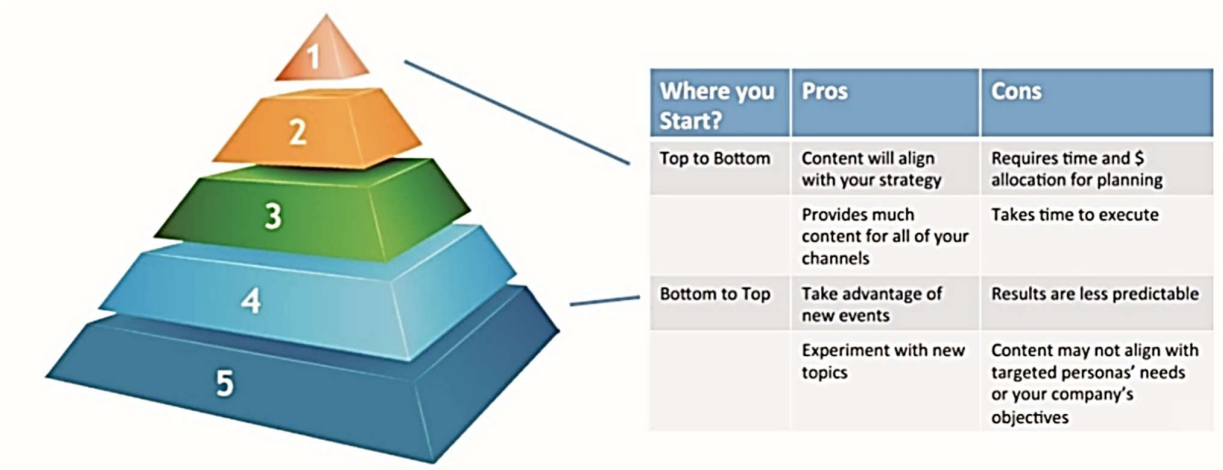
Often, a *'top-down approach'* is used by public health stakeholders in tackling various health challenges. However, the weakness of this is that the stakeholders may not fully understand the problem on the ground and thus end up designing interventions that do not tackle the issue at hand. Literature gives several examples of programs, often run by governments or large inter-governmental organizations (IGOs); many of which are disease-specific or issue-specific, such as HIV Control, Malaria Prevention or Polio Eradication (Stewart, Manges, Ward, 2015). Health awareness programmes in Kenya have mainly used a *'top-down approach'* in designing health promotion programmes. Though successful to some level, the approach has not been sustainable in prevention of disease in the community. *Figure 2.1* below shows one of the previous campaigns run by the Minisrty of Health labelled #pimapressure, which was run to encourage the population to go for blood pressure screening. The campaign run for 30 days over the month of May 2018. The outreach of the campaign however was not widely felt as per their projections.

Figure 2.1: Ministry of Health Officials at the launch of Country-wide Blood Pressure Drive in May 2016

Designing a health campaign for a targeted audience (25-59 year old urban population) requires critically consulting and engaging them in the design process. In the Kenyan scenario for example, design of the IEC material used towards health promotion of 'lifestyle diseases', a top-down approach is used, where the Ministry of Health (MoH) designs and distributes the promotional material without having consulted the end users. There tends then to be a broken chain of communication as is evidenced by the increased prevalence of NCDs in this population, more so because the material designed is not specific to this audience but more to the general public i.e. all ages as well those already affected by NCDs and those who are exposed to the risk factors.

A bottom-up approach can be thought of as *"an incremental change approach that represents an emergent process cultivated and upheld primarily by frontline workers"* (Stewart, Manges, Ward, 2015, p. 241). In line with designing health communication strategies for a community or specific audience, it is critical that the end-users are involved in the design process so that the intended message is communicated effectively. It involves having a large number of people from a community working together, causing a decision to arise from their joint involvement and contribution.

In a *top-down approach*, as illustrated in *Figure 2.2* below, the organization provides information required for the design of a programme. The challenge there-in is that this requires allocation of time and money for planning and this approach may not necessarily align with the needs of the intended users. However, a bottom-up approach takes advantage of new inventions and ideas, all proposed by the intended users as they align with their needs, despite not aligning with the organizations objectives or goals. Nevertheless, the outcome of this approach is that the end-user is considered in the design process and there is a lesser chance of failure of the health programme as all concerned stakeholders are considered.



Where you Start?	Pros	Cons
Top to Bottom	Content will align with your strategy	Requires time and $ allocation for planning
	Provides much content for all of your channels	Takes time to execute
Bottom to Top	Take advantage of new events	Results are less predictable
	Experiment with new topics	Content may not align with targeted personas' needs or your company's objectives

Figure 2.2: Comparison of the top down and bottom up approaches Source: www.curata.com

.In context of this research, *Figure 2.3* below summarizes the two communication approaches with the relevant key stakeholders and the roles each play in the design process of health programmes.

Figure 2.3: A summary of the two approaches is highlighted above where the key stakeholders in the value chain are compared Source: Author's construct (2016)

2.8.6 Human-Centered Design / Co-Design / Participatory Design in Health Communication

Human Centered Design (HCD), also known as Co-Design or Participatory Design (PD), refers to the activity of designers and people not trained in design working together in the design and development process. In this process, consumers of products or services are no longer viewed as users but instead are seen as the experts in understanding and translating their ways of living and the preferred way of improving their own lives (Sanders, 2013). This mindset differs traditionally with when researchers and designers were viewed as being the experts and relegated the people being served by design to be the research subjects and/or the recipients of the designed object.

Participatory design is a design approach in which users and other stakeholders work with designers in the design process (Sanders, Brandt, & Binder, 2010). Participatory design practitioners share the view that every participant is an expert in how they live their lives and that design ideas arise in collaboration with participants from diverse backgrounds (Sanoff, 2007).

In Public Health, Participatory Design, is largely referred to as Co-design; and is used as a way of improving health care services for patients and community. Co-design focuses on understanding and improving health care services, from prevention, treatment and management and information communication (health co-design, n.d). *Figure 2.4* below is a framework that illustrates the structure of how the Co-design process works in health care.

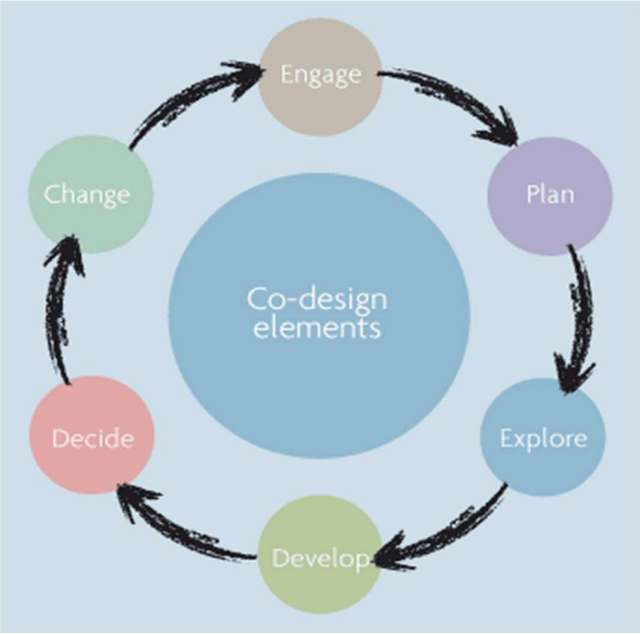


Figure 2.4: Co-Design Process Framework Source: http://www.healthcodesign.org.nz/about.html

The six elements describe the process of Co-design:

1. ***Engage:*** establishing and maintain relationships with the end user to improve their health;
2. ***Plan:*** how to go about working with the user to establish set goals;
3. ***Explore:*** understanding user experiences of services and identifying improvement ideas;
4. ***Develop*****:** the process of turning ideas into improvements towards their health;
5. ***Decide:*** selecting the feasible improvements as guided by the user and how to make them work.
6. ***Change:*** Turning your improvement ideas into action.

The Co-design framework guides in the design process for effective design communication material in health promotion of lifestyle diseases. At the beginning of the design process, the goal should be to first understand the situation, done by

engaging the user of the end product. This allows one gain insights and explore possibilities for behavior change towards lifestyle choices. This involves understanding what any proposed design project or intervention would mean for the affected people and the possible opportunities and challenges towards this. When taking the participatory or co-design approach, it allows end-users be part of the whole design process. They become partners in the design process, helping the designer shape the definition and direction of the communication strategy or intervention.

Co-design's innovative way of actively involving patients in healthcare design has been garnering traction overseas in recent years (Boyd, 2012). Studies have shown that co-design through design thinking workshops can help in building realistic, human-centric solutions.

2.9. Lifestyle Diseases Prevention and Management: Effective Health Promotion Strategies

2.9.1. Barriers and Challenges of Health Promotion of Lifestyle Diseases

Low level of knowledge by community members and health care workers has been seen as a major hindrance to effective health promotion for most chronic lifestyle diseases (Schillinger et al., 2002). While lifestyle diseases have become a global burden of disease more so in LMICs, various interventions have been explored in the fight against its occurrence. Although a small change in behaviour has been noted, mainly due to tax impositions and legislations on tobacco and alcohol use, researchers agree that integrated community-based interventions as well as population-led strategies in health promotion would be the most effective in reducing the prevalence of lifestyle diseases.

Mass media campaigns and direct public education creates the needed awareness about lifestyle diseases and their risk factors (Somannavar et al., 2008). For

example a diabetes awareness campaign and early screening and detection camp conducted in Chennai, India, labelled *Prevention, Awareness, Counselling and Evaluation* (PACE) Diabetes project – conducted between 2004 and 2007, showed a very significant increase in awareness of Diabetes and its risk factors. Though conducted in a small but busy city in India over four (4) years, the significance of the marketing campaign was critical in showing that behaviour change interventions are effective and cost effective in the long term. A scale-up of such an intervention countrywide and in other LMICs would be effective in the fight against lifestyle diseases.

Findings from studies done in Kenya by Maina et al (2010) and Haregu et al (2015) revealed that public awareness campaigns through effective communication channels could help bridge the knowledge gap on lifestyle diseases and in turn promote healthier lifestyle choices. It is however good to note that a major paradigm shift in behaviour change of actors may not necessarily be fully due to the intervention. Information transmission through other channels may have been a contributor. With this is mind, evaluation of such programmes in regards to medium or channel of communication should be done so as the information in the promotional campaigns is sure to be cost-effective yet target-oriented to the intended audience, albeit long-term.

2.9.2. Tried and Tested Communication Strategies in Disease Prevention

Innovative health communication strategies using community-based interventions have in recent times come to the limelight as a new approach towards lifestyle diseases prevention and control. Incentive-based programmes alongside mass media campaigns, have shown to significantly reduce obesity and lifestyle diseases prevalence in LMICs (Lambert and Kolbe-Alexander, 2013). In South Africa for example the use of cash transfers to economically disadvantaged populations towards behaviour change and early screening has worked in the uptake of healthy lifestyles, as purely health promotion messages have not been very effective.

Community-based intervention for example involving community members and leaders in framing and designing health promotion and communication messages have had a major impact in the reduction of lifestyle diseases in LMICs like Indonesia and India (Krishnan et al., 2008). The communities in these regions played a role in the design and implementation of the community-based interventions that saw the effectiveness of this interventions as they felt empowered to take care of themselves through behaviour change alongside the uptake of health-seeking and health care services like early screening and disease management.

2.9.3. Interactive Health Communication: Media Strategies for Lifestyle Diseases Prevention

New information technologies provide communication channels that are more visual and interactive than the older didactic forms of health instructions (Kickbusch, 2001). The media, which has increasingly become a key source of health information is reshaping and influencing the culture of both the developed and developing countries. The use of mass media on the fight against communicable diseases has effectively reduced the infection rates of many of these diseases.

Mass media plays a very vital role in health promotion for sustainable development throughout the world (Odorume, 2015). Health information and communication strategies for promoting healthy eating and physical activity have shown substantial and cost-effective health gains towards lifestyle diseases control and management. These interventions however need to be delivered as a multi-modal intervention to be particularly effective towards lifestyle diseases prevention (Lachat et al., 2013).

Social marketing campaigns tailored to religious and cultural beliefs have been used to control malaria in vulnerable groups, increased uptake of antenatal care in

mothers as well as effective immunization campaigns for measles and polio (Kumar & Preetha, 2012). A similar model or approach can then be used in the prevention and control of lifestyle diseases in LMICs. MHealth (a mobile app) interventions for lifestyle behaviour change have been tested and found to be largely but not wholly effective in promoting meaningful lifestyles. However limitations abound with people with visual disability or limited literacy levels (Piette et al., 2015; Ratzan et al., 2013).

Marketing and advertising practices are important in the promotion of products and services. They are bound to make an effective contribution towards society and behaviour change while satisfying the needs of the consumers (Iftekhar et al., 2013). A content analysis on Television advertising revealed that food advertising has a significant influence on the attitudes and behaviours towards dietary choices (Chan et al 2013). Despite this being an effective medium of promoting behaviour change, the content analysis further revealed that some of the information conveyed was misleading as some of the adverts marketed the unhealthy foods as healthy. This highlighted a flaw that recommended policy makers to have a benchmark on advertising regulations as well as content of messages transmitted.

Consumer health information seeking on-line has also been viewed as an inequitable source of health information because the 'quality' of information gathered may be wanting (Cline and Haynes, 2001). The effectiveness of Information Communication Technologies (ICTs) for health communication has also been hampered by inadequate awareness of the potential of the ICT-led information transmission, infrastructure and more importantly language barrier in the conveyance of messages.

A combination of communication channels, such as mass media, interpersonal and communication channels enhances the effect of communication interventions. This maximizes the chance of exposure in general as no one channel reaches everyone (Krenn et al., 2014). The use of evidence-based leaflets for Family Planning

Awareness in Wales, UK (O'Cathain et al., 2002), use of outdoor advertising media (OAM) for general health promotion in India (Raj et al 2014), use of roadshow cancer-awareness campaigns in rural and urban UK (Smith et al., 2016) and the *'Wake-Up'* Health Promotion in a South African University (Batidzirai et al., 2014) all showed that despite specific advertising media being used in health promotion in the different settings, there are recommendations that there is need for newer, innovative approaches in health promotion; a multi-sectoral, evidence-based health promotion and communication strategy , targeting the complex socioeconomic and religious and cultural changes at family and community levels.

2.10 Design Thinking as a Tool for Public Health Interventions

Design Thinking (DT) is an approach that leads human-centered solutions by direct engagement with consumers in the communication strategy process. End-users are involved in the research and design process of a concept as well as the prototyping of the design in an iterative cycle (Schwartz, 2016). By applying unique approaches to understanding user needs, design thinking takes up a human-centered approach (also referred to user-centered approach) in creating and implementing innovative programmes. This is done through integrating the needs of the people, the various type of technology and media as well as the requirements of the success of the intervention.

The core of design should always be to understand and consider your end-user first. This helps identify their needs, desires and feelings towards a problem presented. In line with this, designing a successful public health intervention can increase the access and uptake of health-care services, prompt behavior change and equally improve expected health outcomes. This can be graphically explained in *Figure 2.5* below developed by the *Stanford Design School*

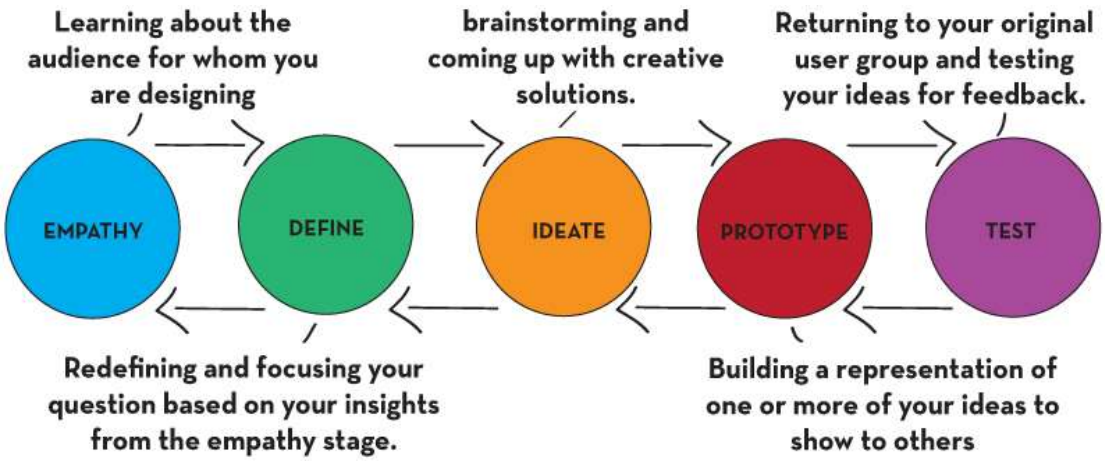


Figure 2.5: A summary of the design thinking process Source: www.createdu.org

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Human-Centered Design (HCD) approach looks at a participatory 'bottom-up' process where the end-users and other related stakeholders play a role in the shaping of solutions dependent on their needs. HCD starts at a small level so that a prototype is developed and tested and a proposed solution to the targeted population is influenced by the message developed. Focus is then laid on the suggested message. For example, one can start with a smaller section of a wider community, find an appropriate solution to that selected community and see how up-scalable this is to communities of similar profiling.

Design thinking (DT) or HCD allows for users and their front-liners design material and programmed that work for them effectively towards their desired goal. HCD programmes follow a similar flow to Behaviour Change Communication programmes in the expected outcomes. This is illustrated in the *Design for Healthy Framework* in *Figure 2.6* below:

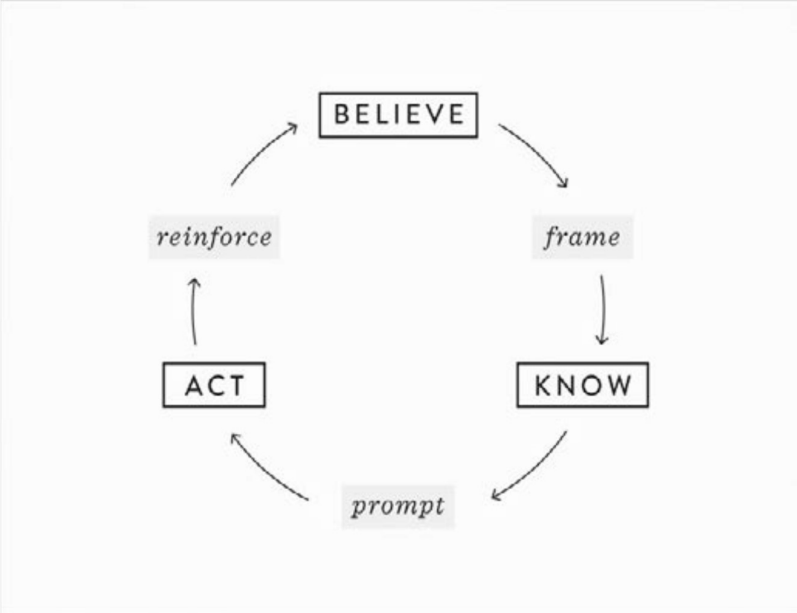

Figure 2.6: Design for Healthy Behaviour Framework. Source: adapted from Klein, Wustrack and Schwartz, 2006

Indicatively, the framework helps to identify problems in a health issue and guide in generating potential solutions and approaches towards behavioral health challenges. The framework is a relatively simple design tool that can help tell a story about relationships in the communication cycle. It can help foster some kind of behavior change and develop innovative interventions towards complex behavior change challenges.

Simply explained, we can take the case of an obese person. The person is made to *believe* that making right dieting choices may reduce the risk of cardiovascular disease. A mental or visual *frame* is placed in the person's mind on how to achieve this goal. The person will then *know* what to do to cut on their weight. They then feel *prompted* to make the right eating habits. Once the person acts on this they then feel good about themselves and at this point there is some *reinforcement*. However, it is prudent to note that *the act* of doing may not be as direct; as more knowledge is required to inform the person on the most feasible way of achieving

the targeted weight loss. A well thought out design process would help achieve this, which would include the user, the designer and the linking chain. In this context we label them as the individual, the community health workers and the relevant health stakeholders.

A closer fit to user needs and improved service experiences is evolving into a form of design for transformation towards societal challenges with particular interest to improved health service provision. This is not only on delivery of proper health services but also in increased capacity and supporting resources for organizations and communities to drive change themselves (Sangiorgi, 2011). Manzini and Risso (2011) have additionally argued that integrated participatory design initiatives can contribute to wider visions of social transformation.

A study done in Ghana in 2016, funded by the Grameen Foundation and Concern Worldwide identified design thinking as a very viable tool suitable in health promotion activities. The study, with a focus on health workers within rural Ghana, saw the co-design of a mobile tool to assist the health workers have a better experience when attending to community members, as well as raising motivation and commitments to their roles as caregivers. The outcome and impact of this intervention saw the Government of Ghana have an incremental change in health-seeking behaviour of the community, as well as an increase in number of healthcare workers enrolment towards providing community health services

2.11. Behaviour Change Communication as a Public Health Intervention

Behaviour Change Communication (BCC) strategies towards the prevention and control of lifestyle diseases lately seem to be the more widely pursued ideal intervention method towards curbing this burden of disease. Reviews done of various health promotion interventions in LMICs revealed that interventions using a combination of health promotion strategies and actions were effective in addressing chronic disease prevalence and associated risk factors (Jackson et al.,

2007). Amongst the more effective interventions is the use of strong multiple strategies and actions implored at multiple levels, involving both the community and stakeholders in lifestyle diseases prevention.

2.11.1. Understanding Behaviour Change

Behaviour change theories explain steps that individuals may go through as they change their behavior. Identifying the intended audiences' current stage in behavior change helps tailor approaches and messages that propel them to the next stage. Behavioural theories help programs designed understand why people behave as they do and how to change their behavior – what intervention(s) can be considered?

The theory of behavior change is one common theory used to explain how people change behavior. It describes the stages individuals go through as they change their behavior, whether with the help of an intervention or not. Through a formative research to identify behavioral challenges beforehand, designing messages and related activities can be integrated with the user in mind to introduce and reinforce positive behavior changes.

The trans-theoretical model (TTM) is one such model that is very similar to the design thinking model which can be analyzed or paired to create a framework that can be used as an intervention in the behavior change process. The TTM (Prochaska & DiClemente 1983; Proschaska, DiClemente & Norcross 1992) is an integrative, biopsychosocial model used to conceptualize the process of intentional behavior change. It uses a persuasive approach and can be applied to a variety of behaviours, populations and settings. The TTM model is illustrated in *Figure 2.7* below.

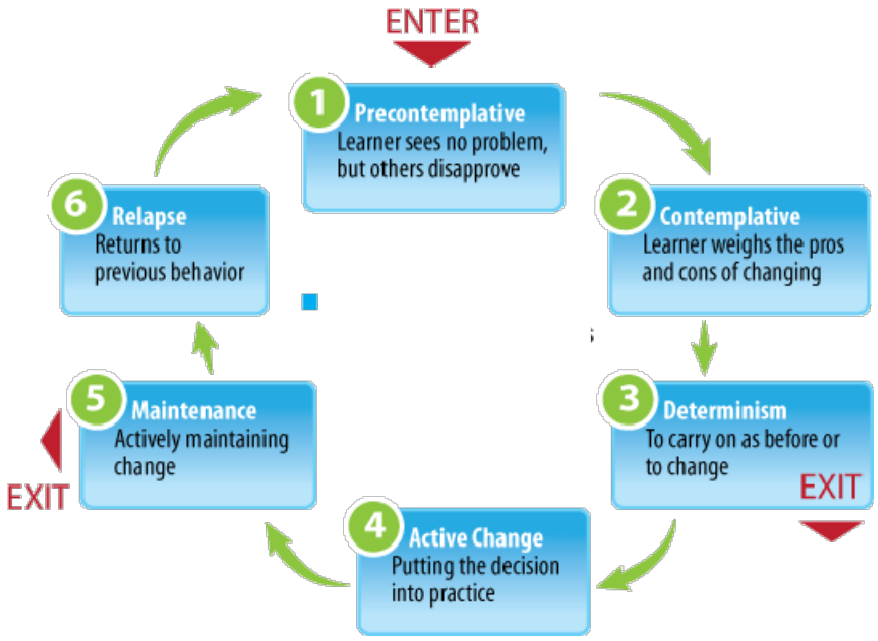

Figure 2.7: trans-theoretical-change-model. Source: https://healthycoeliacstudent.files.wordpress.com/2015/03/transtheoretical-change-model.png

The *pre-contemplation* stage describes people who may not be aware of the need to start on healthy behaviour, mainly because they may be unaware of the benefits of this change. Here, awareness is created and the participant is encouraged to think of the pros involved. Once done, the *contemplation* stage encourages the participant start healthy behaviour and is now aware of the merits of this behaviour change.

The *determinism* phase allows users take action and steps towards making healthy behavior choices as part of their daily lives. With this, an effective intervention is critical so as to encourage the participant retain this positive lifestyle change. As shown in the diagram, exit is possible at this phase if the user does not see the benefits of retaining a non-sedentary lifestyle. Therefore an effective BCC program should be considered.

The *action stage*, (should the participant not exit), is the point where they have wholly made a choice to quit unhealthy behavior and instead adapted healthy ones. Here, further encouragement is provided towards sustaining their chosen lifestyle to avoid a relapse. The *maintenance* stage alerts participants to be aware of possible temptations that could cause them to relapse and in turn have to start the cycle again, perhaps due to stressful situations. Participants in this stage are attached to a support group that encourages them to pursue and retain a healthy lifestyle.

In summary, the cycle of the TTM elaborates how BCC can be tailored at each stage and the add-on of an innovative intervention within the cycle is almost flawless. Design thinking is one such intervention that can be entwined in line with this model to encourage behavior change, where tailored and targeted interventions are considered. This could happen between the Contemplation and the Determinism stages.

2.11.2. BCC Interventions towards Disease Prevention and Management

Key health promotion actions, besides legislation and taxation on tobacco and alcohol, include mass media campaigns, community-based prevention programmes and school-based education for the youth. Used either jointly or separately each strategy has been seen to produce a significant change in the control or prevention of lifestyle diseases. Behaviour change in the prevention of lifestyle diseases has been shown to be very critical in the control and management of its associated modifiable risk factors. Regularly monitoring personal health through healthy lifestyles has proven to control the prevalence and risk exposure of acquiring any one of the lifestyle diseases (Mayega et al., 2014).

2.12 Conceptual Framework

A combination of Human Centered Design (HCD) approach (also commonly referred to as Design Thinking) and Behaviour Change Communication (BCC) strategies can solve various public health related issues. Arguably, most accessible

health care facilities within a community setting, whether of high quality or not, is of no essence if the people in the area are not familiarized with them.

An effective BCC programme should aim at raising awareness about healthy lifestyle choices alongside health-seeking services. BCC programmes are designed to be an iterative process which involves the community affected in the design, development and pre testing of the promotional material used towards health promotion. Alongside this, frequent monitoring and evaluation should be done to determine the pros and cons of the identified BCC programme.

The proposed framework is a combination of the frameworks discussed above that guided the research towards designing a communication strategy that was co-designed by the individuals in the community in tandem with the health workers. The designed strategy will use the communities understanding of effective and sustainable solutions towards a well-structured design intervention that will help them achieve healthy lifestyle behaviours.

As illustrated in the framework in *Figure 2.8* below the individuals in the community are at the center of the health programmes to be designed. CHVs, who are tasked to address the community needs are jointly involved with other health care workers in coming up with a feasible health promotion strategy that works towards addressing the communities health needs. At the centre of the two is the design intervention that will see the two key entities work together to design a feasible and sustainable health promotion strategy, with the expected outcome being awareness creation on lifestyle disease as well as an uptake in health-seeking behaviour of the community members. In turn, this will see a healthier population within the communities. A well-structured public health campaign using co-design, as a health promotion intervention, can help communities achieve healthy lifestyle behaviour and increase uptake of health-seeking services in curbing the incidence of lifestyle diseases within these urban informal settlements

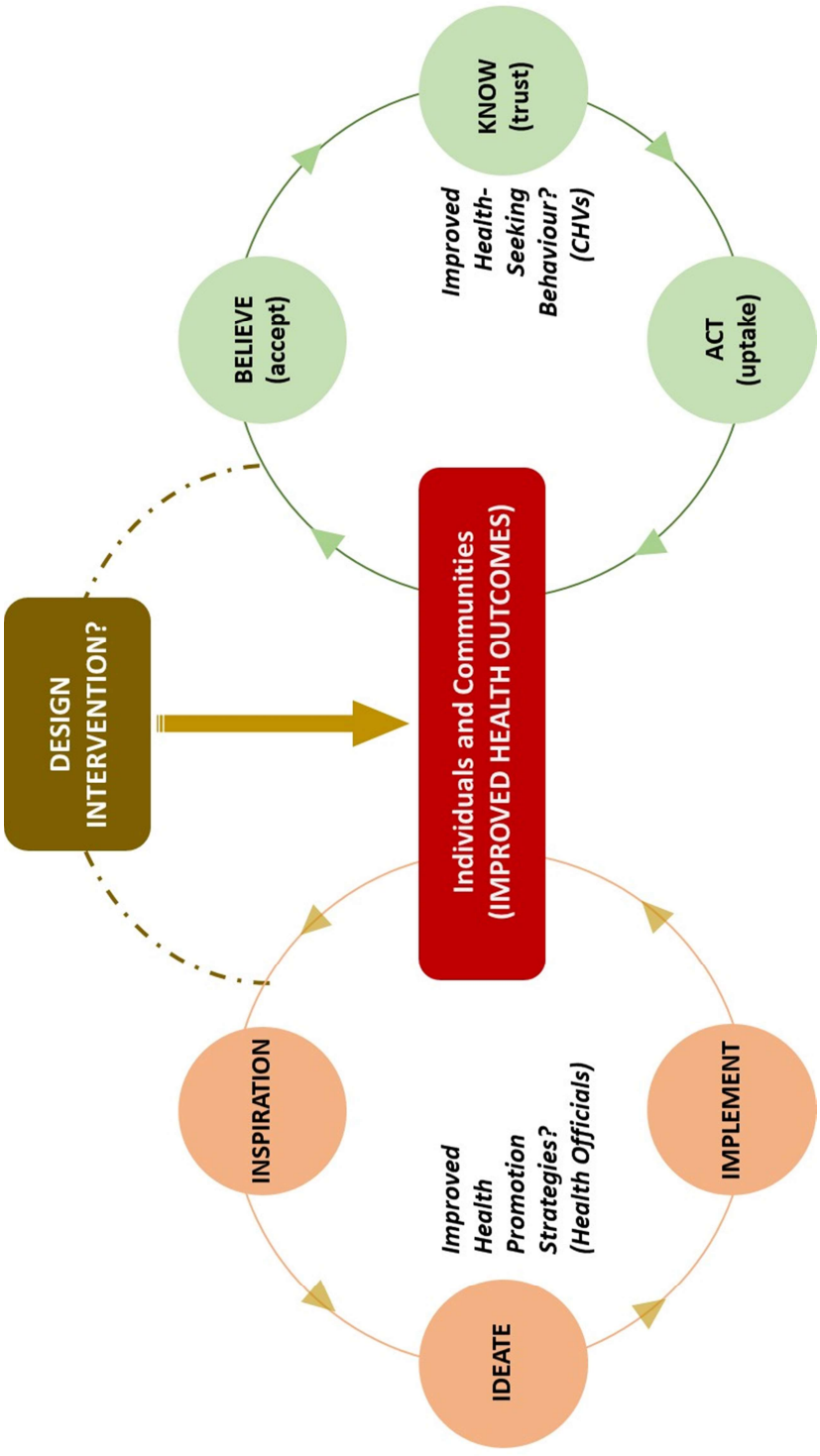

Figure 2.8: Proposed Conceptual Framework Source: Author's Illustration (2017)

3.0 CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

This research took a purely qualitative approach as it sought to source views on the health status of population living in the research area through engagement of the CHVs. A formative research approach was used to collect data and propose a viable health communication strategy that could be scaled up in similar demographic locations in designing health communication interventions for disease control and prevention. This research at the end aimed at pushing for behavioral change of the community members of Kamukunji sub-county through appropriate health promotion channels.

3.2. Research Design

Recognised as a tool in many social sciences, the role of case study design is quite prominent when issues regarding education, sociology, health, education, poverty, unemployment, drug addiction and community-based problems are concerned (Gulsecen & Kubaart, 2006; Grassel & Schirmer, 2006; Johnson, 2006). Yin (1984:23) defines the case study research method *"as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used."*

A case study research design was used for this study as it allowed a very broad area of study to be narrowed down into a smaller researchable topic. Case study research designs are useful in testing whether scientific theories or models actually work in the real world (Shuttleworth, 2008).

In particular, this research used an exploratory case study design as the researcher sort to explore a phenomenon in the data which serves as a point of interest. The researcher was interested in finding out why the occurrence of lifestyle diseases in the study area was on the increase yet prior research showed that this burden of disease was 'actively' tackled by those concerned in the region. To pursue this the researcher did a pilot study in the area with the relevant health officers and baseline data to further guide the research was collected and analyzed. This data allowed the researcher formulate research questions that were used in the actual field data collection.

As an initial stage to data collection, a pilot study is considered a prelude in an exploratory case study and is crucial in determining the protocol to be used in data collection (McDonough & McDonough, 1997; Yin, 2014;). A big advantage of using this particular research design is that the detailed qualitative data produced not only helped explore or describe data in the real-life environment but also helped explain the complexities of the situation on the ground.

3.3. Research Site and Population

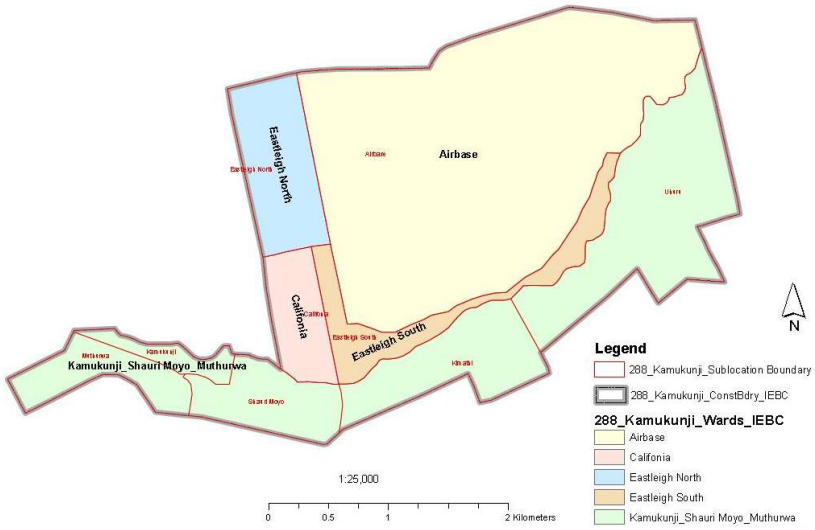

Figure 3.1: Map of Kamukunji sub-county Source: IEBC Website

This research was carried out in one of the most populous sub-counties in Nairobi, Kamukunji Sub County. The population of Kamukunji is estimated at 261,855 (as per the 2009 population census). The region has an average population density of 45,147 people per sq.km. As illustrated in *Figure 3.1*, the sub-county has 5 wards within it; Airbase, Pumwani, Eastleigh South, Eastleigh North and California. This research was conducted in California Ward, mainly because the demographics of the people in this region was diverse. This ward also has a county-owned health facility – The Biafra Lions' Clinic that focuses on Primary Health Care (PHC) services and the key respondents (healthcare workers, CHVs and Community members) for this research were sourced from here.

California Ward in recent times has had an increase in the reporting of lifestyle diseases with majority of the population not well informed on these diseases and their prevention, management and care. The research covered two community units (CUs) - Motherland and Eastleigh South. The area has slightly over 50,000 households covered by 38 CHVs, who are seasonal based on their availability and willingness.

Though poorly serviced since the devolution of health services to county governments, the personnel in the Biafra Lions' health facility try to engage the CHVs in training and information dissemination to the community on various diseases. However, limited funds and related resources have been a hamper to this as not many CHVs are willing to work due to poor information resources and limited, if any incentives.

3.3.1 Stakeholder Mapping and Analysis

Stakeholders are individuals or organizations that are actively involved in a project, or whose interests may be affected as a result of execution of a project or programme from start to completion. As such the stakeholders need to be

considered in achieving project goals, through participation in the design and implementation process (Hossain et al., 2018).

Stakeholder Mapping Process for a project involves but is not limited to:

1. Identifying all the stakeholders
2. Documenting stakeholders needs
3. Assessing and analysing stakeholders interest/influence
4. Managing stakeholders expectations
5. Taking actions
6. Reviewing status and repeat

Participatory approaches involving stakeholders across the health care system can help enhance the development, implementation and evaluation of health services. (Franco-Trigo et al., 2017). These approaches, centred on stakeholder mapping, maybe particularly helpful in planning health promotion programmes so as to overcome the trials they face and avoid challenges during the implementation of new health programmes.

Conducting a stakeholder mapping and analysis is a key first step since it allows relevant stakeholders be identified, as well as providing project implementers a better understanding of the complexity of the existing health system management. *Figure 3.2* below illustrated the stakeholders the researcher identified for the purpose of this research. Stakeholders identified played a leading role in the development of a feasible health communication strategy that could be used in designing health programmes towards the fight of lifestyle diseases in Kamukunji sub-county.

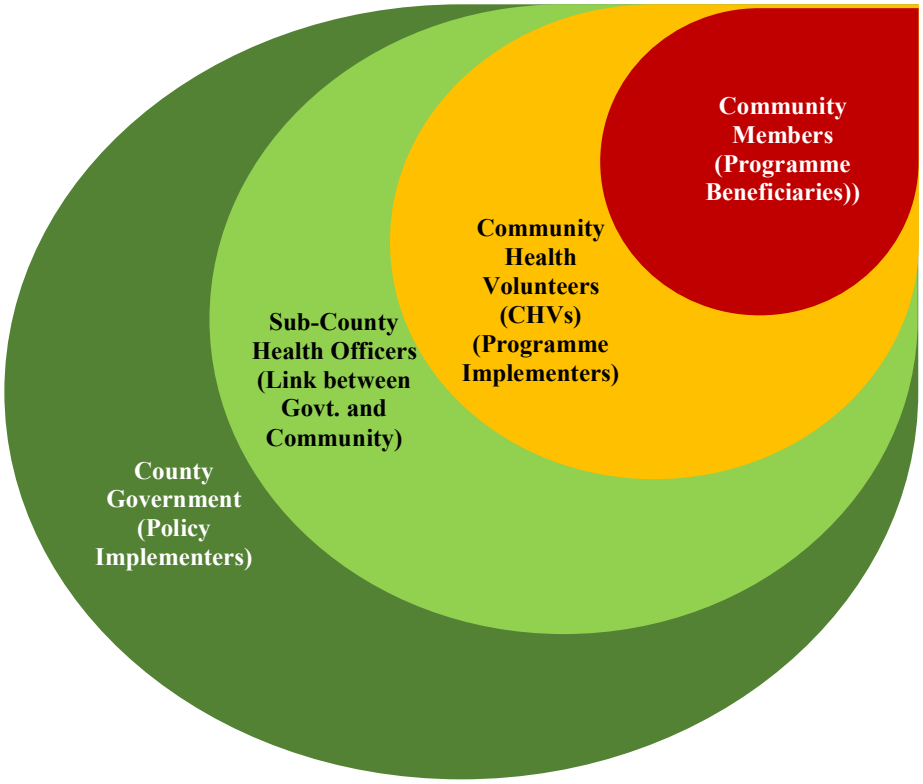

Figure 3.2: Stakeholders Mapping for Kamukunji sub-county Source: A uthor's Construct (2017)

3.3.2 Population and Sampling

Out of a population of 150 households hosting about 4 people per household within the California Ward, the researcher used Purposive Sampling to narrow down to the sample size relevant for this research. Purposive sampling was used to select the relevant stakeholders as these were the key informants of the research. Participants were selected according to the needs of the research (hence the alternate name, *stakeholder* sampling); applicants who did not meet the profile were excluded from the research. The inclusion criteria for the sample population, was that the participants from the community had to be aged between 25 to 59 years of age and had not been diagnosed for any lifestyle diseases. This was mainly

because this study was a prevention-driven research on lifestyle diseases and as such the researcher was interested in the awareness and the level of knowledge of community members and healthcare workers on healthy lifestyle choices. Additionally, Health Officers from California Ward and the Biafra Lion's Clinic and Community Health Workers (now referred to as Community Health Volunteers - CHVs) were also included in the research. The health officers included in the research represented the entire Kamukunji Sub-county as only one for each post was appointed by the County- government and were not appointed per ward because of the limited personnel. Only the healthcare personnel from the Biafra Lion's Clinic solely represented the California Ward, as there are other county-owned health facilities from the larger Kamukunji Sub-county.

The organogram illustrated in *Figure 3.3* below displays the organizational structure of the sub-county health officers, with those in shaded boxes being the ones purposively selected for this research. The roles played by each are illustrated in table 3.1 below

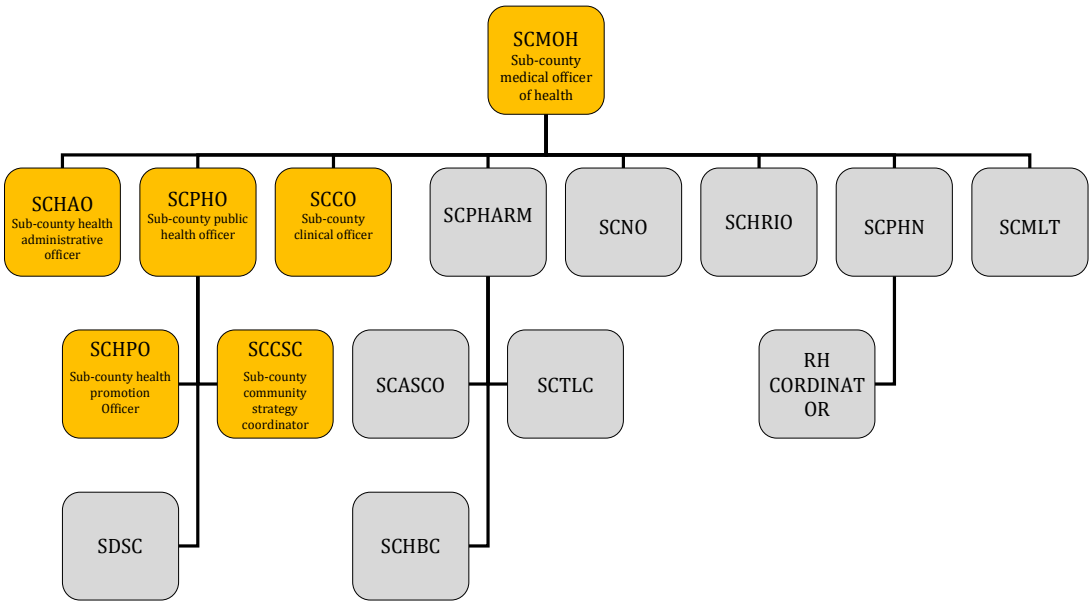

Figure 3.3: Organogram showing the structure of the Sub-County Health Management Team

Table 3.1 below gives a summary of the participants involved in this research and the roles they each played to inform the research and data collection.

Table 3.1: Stakeholders involved in the study in Kamukunji sub-county

Study Population	No.	Data Collection Method	Role Played
Sub County Health Administrative Officer (SCHAO)	1	In-depth Interview	Organizational Structure of Sub County and Authority and Link to Conduct Research
Sub County Community Strategy Coordinator(SCCHS)	1	In-depth Interview	In charge of Community Health Strategy and Selection of CHVs
Sub County Health Promotion Officer (SCHPO)	1	In-depth Interview	Health Promotion Programmes in Sub County
Sub County Clinical Officer (SCCO)	1	In-depth Interview	Prevention, Treatment and Management of Diseases in Health Facility
Community Members	25	Community Dialogue (Survey)	Knowledge on NCDs
Community Members	25	House-to-House Visits (Open Ended Questionnaires)	Knowledge on NCDs
Community Health Assistant (CHA)	1	In-depth Interview	Background information on community health and link to the CHVs
Community Health Volunteers (Case Study Group)	7	In-depth Interview	Key informants in the proposed design intervention
Community Health Volunteers (CHVs)	15	Focus Group Discussion	Highlight situation on the ground towards health promotion of NCDs
SCHAO, SCCSC, SCHPO, SCCO, CHA, CHVs, DT Experts	15	Design Thinking Workshop	Co-Design a health promotion and communication strategy towards NCDs prevention and control

3.4. Data Collection Methods and Tools

Being a formative research that would give mainly qualitative data, the following data collection tools were used for this study:

3.4.1 In-depth Interviews

A more personal approach with a respondent is the most effective and efficient way to get information. This ensures utmost trust and co-operation from the respondent. (Mellenbergh, 2008). The researcher first engaged the sub-county health officers in in-depth interviews during the pilot study to get some baseline information about the health of the community they served and the kind of IEC material they used when disseminating health information on lifestyle diseases.

Data on the prevalence of lifestyle diseases and reporting methods to the health facility was also acquired. The key informants - the CHVs were thereafter interviewed to further get information on the health status of the community members within Kamukunji sub-county. This sessions were recorded audio-visually highlighting their experiences as health volunteers within the study region.

3.4.1.1 Sub-County Health Officers

The in-depth interviews were conducted between the months of October and November 2017. The researcher, steered by an interview guide interrogated the Sub-county Health officials on the health status of the community they served, with particular interest to Non-Communicable Diseases. The six (6) health officers from Kamukunji Sub-County included the Sub-County Health Administrative Officer (SCHAO), Sub County Health Promotion Officer (SCHPO), Sub County Clinical Officer (SCCO), Sub-County Community Strategy Coordinator (SCCSC),

Community Health Administrator (CHA) and the Sub-County Clinic Health Worker (Head Nurse).

To answer partially to Objective 1 of this research which was ***to investigate how community members in Kamukunji sub-county are encouraged to maintain healthy lifestyles by the healthcare givers***, the researcher conducted in-depth interviews with the 6 sub-county officials aforementioned. These were purposely selected because they were directly involved in health education and promotion strategies with the CHVs in the Kamukunji sub-county. The output from the interviews was to appreciate the Knowledge and Perception of the Kamukunji community members on lifestyle diseases and related risk factors in relation to healthy lifestyle choices.

The interviews with these select health officers also partially responded to Objective 2 of this research which was ***to establish the knowledge on lifestyle diseases and training methods of community health volunteers within Kamukunji sub-county*** as well as the communication methods or channels of knowledge acquisition of the same on healthy living. The output helped review the design process and interrogate the applicability of the messages portrayed in the IEC material towards the promotion of lifestyle diseases.

3.4.1.2 Community Health Volunteers

The researcher engaged seven (7) of the CHVs attached to the Biafra Lion's Clinic, Kamukunji, after the interviews with sub-county health officials, to get their views on the journey of health promotion within their setting. The CHVs are directly involved in health promotion within the community in the sub-county and as such they were able to highlight the exact health issues on the ground and the challenges the community members faced when dealing with lifestyle diseases. Due to the diverse religious, social and ethnic demographics of the community members of

the study site, the researcher opted to use the CHVs as the key informants of this research, as they had a deep understanding of the population therein.

The researcher interrogated the CHVs on several key issues about health promotion activities within their settings with particular interest on lifestyle diseases prevention and management. Of key interest were the health communication channels they engaged in, with whom, how they got the health information and how they disseminated the same. The researcher also sought to find out the community members' role in taking care of their health, their health-seeking patterns and how the community was encouraged to do this.

3.4.2 Community Dialogues/Training – (CHVs and Community Members)

Dialogue is a process involving active listening as well as talking. It implies accepting and respecting the views of others and trying to understand where they are coming from. Dialogue deepens understanding of our own, and each other's positions, often leading to shared understanding and an enhancement of our ability to make informed decisions. One major advantage of dialogues is that it aims to transform and encourage an understanding of issues through open, genuine sharing and deep listening.

A community dialogue was conducted at the local social hall (housed at the Salvation Army Restoration Centre, Kamukunji) where majority of health talks are done by the CHVs assisted by the leading health educator(s) from the health facility. The health sensitization talk was done on the 13th of April 2018. The session was facilitated by the Community Health Administrator (CHA). These sessions are held weekly or on demand in the case of an epidemic to sensitize the community about the prevalent diseases at that particular time.

The community dialogue sought to partially answer to Objective 1 of this research which was ***to investigate how community members in Kamukunji sub-county are encouraged to maintain healthy lifestyles by the healthcare givers.*** The researcher sought to interrogate the Knowledge and Perception of the community members on lifestyle diseases and related risk factors in relation to healthy lifestyle choices. The CHVs engaged the community in discussions around lifestyle diseases and asked the members present to freely ask and give their views on the same topic. 30 community members meeting the inclusion criteria (healthy 25-59yrs) for this research were involved in this community dialogue. Audio-visual recording of the community dialogue was also done, alongside note-taking of issues discussed.

Figure 3.4: Community Dialogue at the Salvation Army Restoration Centre, Eastleigh, Kamukunji, facilitated by the Head Nurse of Biafra Lions' Clinic. Source: Author (2018)

3.4.3 Focus Group Discussions – (CHVs)

Focus Groups Discussions (FGDs) are used mainly in participatory research and action, and commonly lead to design of a participatory toolkit. It involves different types of participants, with common characteristics who are put together and enter

a conversation about an issue (Participatory Methods [PM], n.d.). FGDS are a method of qualitative research where questions are raised about perceptions, attitudes, opinions, ideas or beliefs of a certain issue, setting or region (Herd.org n.d.). The freedom of speech is allowed here and open and honest discussions with other participants is highly encouraged.

A focus group discussion was carried out at the Biafra Lion's Clinic, the sub-county owned health facility at Kamukunji Sub-county, on 20th June 2018. A total of 15 CHVs (including the 7 case study CHVs) were included in the discussion. Alongside note-taking during the discussions, audio and video recording was done as a data collection method. The session took approximately 2 hours.

Figure 3.5: Focus Group Discussion with CHVs facilitated by the Researcher
Source: Author (2018)

In this participatory research, a group of CHVs were brought together to discuss a number of issues regarding lifestyle diseases in the community they served including challenges they faced when addressing this burden of disease. The session, facilitated by the researcher, sought to explore the communication channels the CHVs used to educate the community members on lifestyle disease

prevention and management. The researcher, through the discussion, was able to interrogate some of the IEC material the CHVs used in their daily routines and review the message content. The researcher also sought the opinion of an all-encompassing range of CHVs (not only the case study group), on improved channels of health promotion material they would consider in educating the community members on heath matters. As such Objective 3 of this research, which was ***to explore existing health communication channels within Kamukunji sub-county and synthesize with new proposed ones in the prevention and management of lifestyle diseases***, was answered to.

A guideline of pre-set questions, adopted from the in-depth interviews conducted on both the sub-county health officers and the case study group of CHVs, led the discussions.

3.4.4 Open Ended Questionnaires – (Community Members and CHVs)

Open ended questionnaires allow the respondent(s) to answer questions based on their complete knowledge, understanding and opinion. This research tool depends heavily on open and subjective responses on a given topic with room for further probing by the researcher, based on the answer given by the respondent (Question Pro [QP] n.d.).

Open ended questionnaires were administered by the researcher to community members during the community dialogue and door-to-door visits conducted by the CHVs. A total of 57 questionnaires were administered with 88% response rate, as only 50 questionnaires were returned fully answered. The responses from these questionnaires helped the researcher gain valuable information about the subject at hand – which was a deeper understanding of the respondents' knowledge of lifestyle diseases as well as activities they did to ensure they lived healthy lifestyles. The researcher was able to gain valuable knowledge about the subject

matter and was able to evaluate the data collected to answer to some of the research questions.

The CHVs, alongside the Community Members, also filled out Open Ended Questionnaires designed for them before they were indulged in the FGD and this was used to triangulate the information shared by the CHVs during the discussion.

Figure 3.6: Community members fill out the open-ended questionnaire assisted by a CHV after the community dialogue Source: Author (2018)

3.4.5 Design Thinking (Co-Design) Workshop

Design Thinking (DT) is an approach that leads human-centered solutions by direct engagement with consumers in the communication strategy process. End-users are involved in the research and design process of a concept as well as the prototyping of the design in an iterative cycle (Schwartz, 2016). Co-design emphasizes on working with relevant stakeholders in a process on an ongoing basis (framework) and the end-user in particular. This suggests a more sustainable process rather than

the conventional approaches that have the end-user receive a predetermined or predesigned product.

Co-Design of health promotion programmes encourages participants identify 'rules of thumb' that appear to produce positive experiences towards health service provision (Dearden & Finlya, 2006; Bate & Robert, 2007). As such common areas of concern towards health promotion are suggested for the 'design team'. The 'design team' sees these concepts and use them to put something down, so as to take it further to the prototyping phase, as explained in the Design Thinking Process framework in Chapter Two. (*Figure 2.5)*

To accomplish this final phase in the research, a Design Thinking (DT) workshop was conducted at the Double-Tree Hilton Hotel, off Ngong Road on the 25th of July 2018. The DT workshop included key stakeholders in the health promotion process, the decision makers and the implementers. The 7 case study CHVs and the 6 Sub-County Health Officers previously interviewed, guided by 3 Design Thinking experts were engaged in this workshop that helped in co-designing a Health Communication Strategy; that could be used in the promotion of lifestyle disease prevention and management in their local community within Kamukunji sub-county.

A set of interactive and brainstorming sessions were lined up for the one day workshop, that saw the participants at the end of it formulate a feasible health communication strategy that could be adapted in designing health programmes towards the fight of lifestyle diseases. Ideas and concepts formulated during the discussions were noted down and a concept map was created to help formulate the proposed health communication strategy.

Figure 3.7: The Researcher facilitating the Design Thinking workshop with the key stakeholders involved in health promotion of lifestyle diseases. Source: Author (2018)

The main objective of this research was ***to co-design a population-led communication strategy with CHVs and relevant healthcare stakeholders that can be used in the prevention and control of NCDs amongst the urban 25-59 year olds living in informal settlements in Kamukunji, Nairobi County.*** The expected outcome of this co-designed population-led communication strategy is that the framework could be used in designing user-centered and community-led health promotion programmes and material towards the prevention of lifestyle diseases.

Participants during the design process of health promotion material, were grouped together to discuss various topical issues towards the prevention and control of lifestyle diseases within their community. Major challenges that were tackled within their groups were all aimed at improving the health-seeking behaviour of the members within their community. Alongside this, they needed to agree on ways

that they could decrease the incidence of lifestyle diseases within California Ward of Kamukunji sub-county.

As a prelude to programme for the day at the DT workshop, the DT experts begun by easing the participants with fun and engaging activities that would help narrow down the gap between the health officers (who were considered the 'bosses') and the CHVs (who were considered the 'employees'). This social gap needed to be bridged so that each participant would be able to speak up without feeling undermined or the hierarchical disparity between the two groups. The DT trainers' list of activities saw the participants work collectively as a group and individual projects that made them work in teams as well, carefully matched by the DT trainers.

Figure 3.8: Ice-breaking activities for the participants during the design thinking workshop Source: Author (2018)

Key areas extensively discussed during the workshop involved; understanding patient and staff experiences (both health practitioners and community health volunteers), delving into the issues affecting health-seeking behaviour among the community members and coming up with tangible solutions towards the issues.

3.4.5.1 Concept Mapping

This is a structured process, focused on a topic or construct of interest, involving input from one or more participants – that produces an interpretable pictorial view (concept map) of ideas and concept and how these are interrelated.

Steps in concept mapping:

1. ***Preparation Step:*** Identifying the stakeholders – between 10 to 20 people, who help to develop a focus of the problem and project. They help define the program and map out the outcome.
2. ***Generation Step:*** This entails developing a set of statements that addresses the focus or define the program. This could be through brainstorming, focus group discussions and analysis of text from the discussions and interactions
3. ***Structuring Step:*** Statements from the participants are sought and similar themes are identified and piled into similar ones – which are labelled into short descriptive texts or themes. The statements are then scaled on rating of 1- 5 based on their relative importance.
4. ***Representation Step:*** Analysis of the findings is done by sorting and rating the inputs of the participants into a map. Through cluster mapping, one takes the point map and partitions the map into groups of statements or ideas into clusters (themes).
5. ***Interpretation Step:*** (Also known as the Co-design Stage). A facilitator at this point works with the stakeholders to help them develop their own points and interpretations for the various constructs.
6. ***Utilization Step:*** This involves the use of the maps or constructs to help address the original focus of the program. Ideally, the map can be used as a visual framework for operationalizing the program on the outcome side. It can also be used as the basis for developing measures and displaying results.

3.4.6 Photography, Video and Audio Recording

While photography and video is very much a technology of this present age, its use as a tool for research is not as common as would be expected. The merits of this tool cannot be underrated, particularly for non-participant observations when conducting a research.

The researcher through most of her data collection opted to do audio-visual recording for a number of reasons:

a. It brought out a strong sense of direct experience with the phenomena
b. A video can be added to reports and papers to promote a richer discussion, and highlight key issues that need visual evidence
c. A video always allows one to capture important incidents, expressions, conversations and other activities; in turn these will help in developing ideas, illustrating key pointers and provide consistency in the topic being researched.
d. Audio and Video recording also allowed for its availability to other researchers to check findings with the possibility of reinterpretation
e. Lastly it was used to triangulate other data collected using other methods.

The activities recorded included; the Community Dialogue, the Focus Group Discussion, the house-to-house visits in the study area and the Design Thinking Workshop. At the end the researcher was able to produce a documentary highlighting the research problem in the study area.

3.5 Data Analysis

Despite this research being very heavy on qualitative data, a bit of quantitative data was acquired to validate and support the qualitative data collected from the field. As such the researcher used the following methods which have been broadly described to analyse these data.

3.5.1 Content Analysis

Content Analysis is a qualitative method of analysis that seeks to understand and study communication patterns within a data set, with the focus of this analysis being on words and contexts in both text and images. It is used as a descriptive approach that uses the coding of data and the interpretation of the same data into quantitate counts of the codes (Downe-Wamboldt, 1992; Morgan, 1993).

In the case of this research, the data collected through the community dialogue and the semi structured questionnaires was in the form of both written and audio visual content. In this regard the analysis of these data helped determine the extent of the sequential occurrence of responses by the participants. The findings were then presented graphically in form of infographics and histograms as portrayed in Chapter Four below.

3.5.2 Thematic Analysis

Thematic analysis is a purely qualitative analysis method that is usually applied to a set of texts such as interviews and focus group discussions by mainly identifying, analyzing and reporting patterns within a data set. It is useful in summarizing key concepts of a large set of data through a structured approach that produces clear and well-organized reports (King, 2004).

This apt qualitative method of data analysis is used when working with research teams and allows the examining the perspectives and observations of different research participants, highlighting both their similarities and differences as well as generating unanticipated perceptions (Nowell et al., 2017). As such, the field data from interviews conducted with the CHVs and Health Officials as well as the Focus Group Discussion with the CHVs was analyzed using this approach.

The core difference between content analysis and thematic analysis is that thematic analysis has a larger scope to explain in-depth information and is purely qualitative; whereas content analysis is narrower by using codes and the focus is more on the frequency of responses.

3.5.3 Visual Analysis

Schroeder (2006) defines critical visual analysis as a qualitative analysis method that offers researchers an interdisciplinary approach for understanding and contextualizing images and crucial concerns given the cultural centrality of vision. Put simply, the researcher makes their own notes and records based on what is observed from the data and analyses the visual elements by writing about separate parts of the artwork or image for a better understanding of the whole piece of artwork.

The promotional material collected in this research was analyzed using this method through interpretations of meaning from the visuals displays within these material. The visual observations were translated into written text guided by the literature reviewed on visual elements of health campaign material. The analysis should involve looking at the overall organization of the materials, how the elements and messages therein impacted the meaning and interpretation of the work and the relationship of these promotional material to the recommended standards (Xanthe et al., 2017).

3.5.4 Needs Assessment Analysis

This analysis method entails conducting observations from data collected to gather information about the needs of populations or groups within communities (Tutty and Rothery, 2001). It is sometimes used as a way of evaluating the relevance and efficiency of existing programmes within a setting.

A needs assessment is in short the 'what' that precede the gap in a research, that is the 'how'. The researcher used this analysis method to identify the gaps that lay within the study area in regard to health promotion and awareness of Lifestyle Disease within the community of California Ward, Kamukunji sub-county. Ideally, the research sought to close the gaps between where the community is currently and where the community need to be or would aspire to be in terms of healthy living.

3.6 Ethical Consideration

Research must be done in an ethical manner particularly where human and animal participants are involved. Research ethics provide a set of guideline for researchers conducting research so that it can be said to be done in a just manner without causing harm to the participants or the process as a whole. It is the duty of the researcher to conduct their research in line with established ethical standards. (Fouka and Mantzorou 2011)

As such, every step of this research was informed by ethics to ensure integrity of the project. Some of the guiding principles of research ethics such as informed consent of the participants, privacy and confidentiality (where necessary), openness about the research and sourcing of relevant research licenses were adhered to by the researcher.

Research approval for this research was issued by the following entities. *(The documentary evidence is attached in the Appendices section of this thesis).*

1. Graduate School – University of Nairobi
2. National Commission for Science, Technology and Innovation (NACOSTI) - Nairobi
3. Ministry of Health (MoH) - Kenya
4. Ministry of Education (MoE) - Kenya
5. County Commissioner, Nairobi County

4:0 CHAPTER FOUR: FINDINGS AND ANALYSIS

4:1 Introduction

This chapter describes in detail the findings from the field work done by the researcher. The chapter categorizes various responses given by the choice of participants involved in the research, based on the data collection methods as guided by the thematic issues identified. This field research, conducted over a period of 10 months, was carried out in an urban informal settlement of California Ward, in one of the most populous sub-counties in Nairobi, Kamukunji Sub County. The area has in recent times had a prevalence of lifestyle diseases with majority of the population not well informed on these diseases and their prevention, management and care.

A summary of findings showed that the major challenges the health officers and the CHVs faced in health promotion and awareness of lifestyle diseases and related risk factors included; lack of proper information dissemination material, poor health education and training methods, poor resource allocation, socio-cultural challenges as well as varied literacy levels amongst the community members of Kamukunji sub-county. These identified issues are explained thematically in detail below.

4.2 Definition of Lifestyle Diseases

Various data collection methods were employed to determine what the aforementioned participants of this research understood as lifestyle diseases. During the Community Dialogue, the trainer/facilitator (head nurse of Biafra Lion's Clinic) acknowledged the prevalence of lifestyle diseases in the California Ward and re-iterated how the youth had in recent times been affected by these diseases that were once associated with those of older age-groups. These diseases,

he added were now affecting the youth because of change in lifestyle such as poor eating habits and other unhealthy practices – like alcohol and tobacco use.

The discussion on the types of lifestyle diseases began by the group in attendance (community members) acknowledging the fact that most people attributed sudden deaths and diseases that they did not understand to witchcraft and other supernatural forces. This in turn hindered the kind of attention required; which was considered critical for early detection of most lifestyle diseases. For each disease, symptoms were outlined by the facilitator. Prior to this however, the facilitator indulged the community members by prompting them to give their own ideas on what they thought would be the symptoms for the various lifestyle diseases. The next step would be to advise the group on the management of those diseases. This entailed giving them detailed advice on what to do when one suffered from these diseases. The facilitator advocated for consumption of balanced diets and practice of good hygienic measures that one needed to pay attention to towards the fight of disease.

The researcher sought to establish if the participants understood the term 'lifestyle diseases' and the how they would define it. All the 50 respondents both from the community dialogue and house-to-house visits agreed that they had heard of the term lifestyle diseases. However their understanding of the term and the related diseases was varied as summarized in *Figure 4.1 below*. (*A more comprehensive table on their responses is attached in the appendices section of this thesis).*

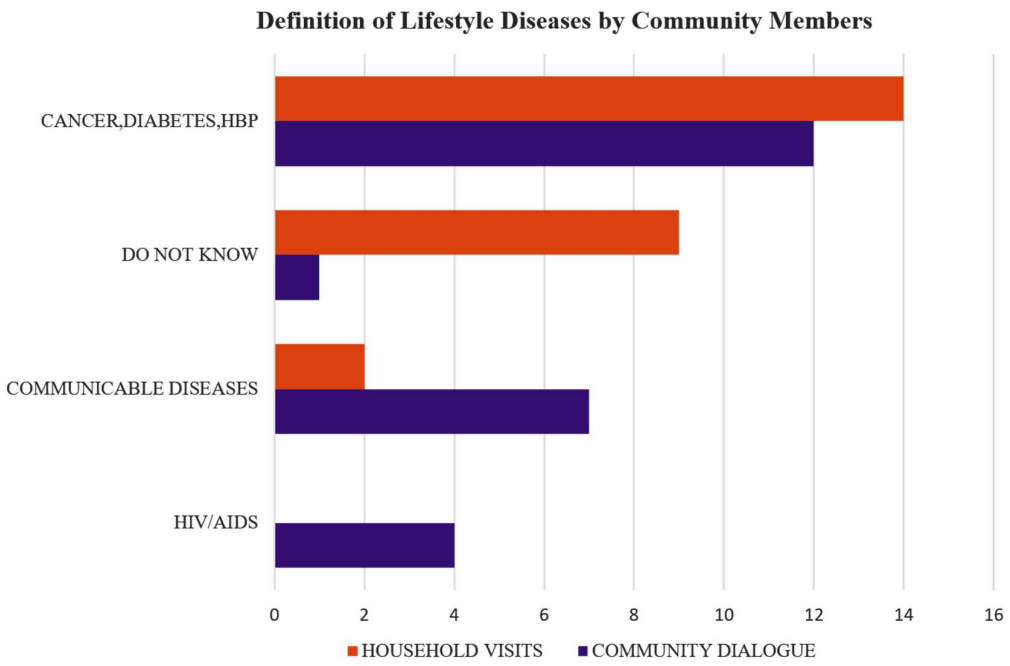

Figure 4.1: Comparative Responses on Definition of Lifestyle Diseases by Community Members based on Health Information Dissemination Mode Source: Author (2018)

As portrayed in *Figure 4.1* above, it is clear that the participants had some varied information on lifestyle diseases. All the respondents understood what it entailed having or living a healthy lifestyle and as such mentioned in varied responses what they thought contributed to one having a lifestyle disease. However, it is key to note that some of the respondents did not quite have a clear definition of lifestyle diseases as being non-communicable as highlighted in the infographic. On further interrogation, the respondents explained that lifestyle diseases meant diseases that were acquired by lifestyle choices such as irresponsible sexual behavior. They also added that environmental pollution was a contributor to lifestyle diseases as they were a cause to contaminated food and water and as such consumption of these caused diseases like typhoid and cholera. One respondent also mentioned the presence of a lot of mosquitos that led to an outbreak of malaria which he classified as a lifestyle disease.

From the cluster graph, a comparison is shown on the responses of the community members interrogate both after a community dialogue and after house-to-house visits. Key to note was that 11 out of the 25 respondents questioned at the community dialogue believed that HIV/AIDs and Communicable Diseases (CDs) could be classified as lifestyle diseases, compared to 2 out of the 25 respondents questioned during the house-to-house visits. Overall, out of the 50 community members it is evident that 50% of the respondents are familiar with lifestyle diseases. However, it is also worth noting that the other 50% were not familiar with lifestyle diseases with 28% of these respondents; not being clear on what these diseases were and as such were not able to identify them or their causes.

4.3. Incidence of Lifestyle Diseases in California Ward, Kamukunji sub-county

4.3.1 Health-Seeking Behaviour of the Community Members

California Ward in Kamukunji Sub-county harbors an urban informal settlement and just like any other informal settlement the living conditions in the area are rather poor characterized by housing congestion, open gullies and in some areas - open drainages. Most of the residents seemed to identify with and appreciate the CHVs and the services they offered the community. The financial implication of seeking treatment by community members has also been a challenge as they opt to feed their families as opposed to spending money on medicine and hospital visits.

CHVs who were participants of the FGD were of the opinion that majority of the community members did not go for regular medical check-ups and would wait until they were critically ill to seek medical services at the health facility. Alternatively, most community members preferred to source over-the-counter drugs which mainly suppressed the symptoms they had. This in turn would ‘hide’ the diseases they were ailing from, and would thereafter inhibit proper diagnosis of the same. The end result was that the disease would worsen and eventually become

untreatable. One of the cases mentioned, that was widely popularized after her death, was of a middle-aged woman who had for a long time been suffering from Breast Cancer. The fear of stigmatization and extreme poverty led her to conceal her ailment and would manage the pain by sourcing painkillers from one of the local pharmacies within the community.

The scenario depicted above has resulted to most lifestyle diseases being diagnosed at late stages when treatment and management is tougher. The CHVs added that from their experiences, the male population in the community were notorious for taking painkillers until they could no longer withhold the pain and other related symptoms. This is based on the stereotype that the pride of a man is based on how much pain he could endure before visiting a health facility to seek treatment.

4.3.2 Emergence of Newer forms of Lifestyle Diseases

According to the sub-county health promotion officer, diseases like mental health, which have recently been classified as a type of lifestyle disease by WHO (2017), have increased greatly in this community and trained medical experts in this field are unavailable to attend to the reported cases.

"The sub-county health facility is unable to manage this and thus end up referring the patients to Level 5 Hospitals and private health facilities. However patients cannot afford the fees in these hospitals and end up suffering at home". – Health Promotion Officer – Kamukunji Sub-county

The same sentiments were shared by the one of the CHVs who has worked within the Community for over 5 years. The CHV noted that cases of depression and suicide among the youth in California Ward had increased in recent times but unfortunately there was insufficient help from the local government health facility.

"The youth in our community are going through a lot of problems, joblessness, family disputes, marital wrangles….some have resorted to crime and end up dead. This has caused a lot of mental issues within this group but they still cannot afford to get treatment, because they would have to go to private hospitals which they cannot pay for. Additionally the stigma around mental illness in very big here, and thus someone cannot disclose their mental status and end up suffering alone". – CHV – Kamukunji Sub-county

4.4 Knowledge and Perception of Lifestyle Diseases

4.4.1 Health Information Mode of Transmission to Community Members

The researcher further sought to establish if the community members were made aware of the existence of these lifestyle diseases and what communication channel was used to get this information. The researcher used this information as a way of determining whether there was any existence of health communication material promoting prevention and management of lifestyle diseases and the proficiency of these material. The aim was to establish as to whether the material was relevant in information dissemination and determine the improvements the material would need in order to be operative. *Table 4.2* below summarizes the responses of the participants. (*A more comprehensive table on their responses is attached in the appendices section of this thesis).*

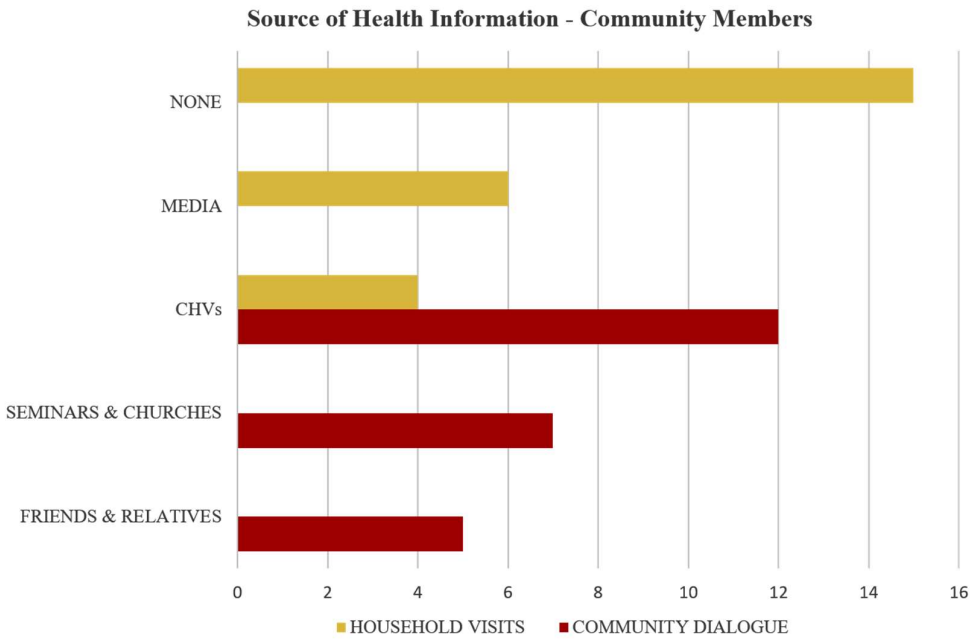

Figure 4.2: Comparative Responses on Source of Health Information offered based on various communication media Source: Author (2018)

As indicated, the responses from the community members questioned in different settings as per the legend in *Figure 4.2* shows that the modes of health promotion material were not synchronized with some participants stating that they had not encountered any communication material on lifestyle diseases prevention and management. This was especially the case with participants in households who added that lifestyle diseases were not a frequently discussed topic during the household visits by the CHVs.

5 out of the 25 interviewed during the community dialogue said that they had chanced upon lifestyle diseases when either they, a relative or a friend suffered from either one of the lifestyle diseases and would then gather more information from the affected source. The challenge with this is that the participants were only familiar with particular sets of symptoms and this would be misleading when trying to associate with any symptoms they may experience.

Overall, as indicated in *Figure 4.2* above, 44 out of the 50 the respondents – 88% of the respondents - were not familiar with any health communication material promoting or creating awareness on lifestyle diseases; and mainly got information orally on diseases from the CHVs, churches or friends and relatives. In this regard, almost 50% of the respondents agreed that the CHVs were doing a good job towards health promotion by paying them visits in their households and during health talks at community dialogue sessions. However the respondents all agreed that the CHVs should be facilitated better with relevant IEC material to help them in information dissemination.

Key to note from the findings was that media as a source of information on Lifestyle Diseases was quite common within households. The most commonly mentioned sources were radio and television. Respondents from the households mentioned having had and/or seen advertisements and promotional messages on cancer screening drives and Diabetes and Hypertension Drives. They have noted that the frequency of this was not often as the adverts seemed to run around the Awareness Day of the respective ailments i.e. World Cancer Day and world Diabetes Day.

4.4.2 Expertise and Knowledge of CHVs as health educators

The CHVs were considered as the communities immediate medical consultants and as such handled a lot of the communities' medical emergencies. When handling major conditions, the CHVs customarily referred the patients to the local health facilities where the community members could access medical care. The challenge noted however, was that the local health facility was ill-equipped and as such the members were forced to seek treatment at private hospitals of which the community members were unable to afford; mainly because most of them were low-income earners and a major unemployed.

The CHVs were quite passionate about their work and this was driven by their inspirations that were quite varied. Some were stirred by their general knowledge on health care, others felt it was a calling, while others were driven into voluntary work by their own personal experiences such as abuse-related factors and teenage pregnancy. For example, one of the CHVs had an unplanned pregnancy in her teenage and suffered the plight of being a young single mother. It is through this experience that she got inspired to volunteer at the health facility at the post-natal section. This way she has had a chance to meet other young mothers in desperate situations (such as attempted suicides and abortions) and thus was able to encourage them giving them hope for a better tomorrow.

All the CHVs who participated in the survey were high school graduates – who later underwent college training from various institutions in wide-ranging professions but still opted to become community health volunteers. The CHVs work is mainly voluntary and they only get to earn small stipends from independent researchers by assisting them access the community and occasionally carry out trainings on certain epidemics or awareness programmes on various vaccines and ailments. The CHVs did not feel motivated and most of them felt that their service provision would be better if incentivized; and in turn more people would sign up to be health workers in their community. As is, the current number of CHVs were unable to cover the households within the ward and were extremely overwhelmed by the responsibility.

4.5 Lifestyle Diseases Prevention and Management

4.5.1 Awareness Creation – Communication Channels

Lack of proper IEC material for the training of the CHVs was another major challenge mentioned by the sub-county health promotion officer (SCHPO). The IEC material provided by the National Government was outdated or irrelevant and they were forced to use these same material to disseminate health information.

Some of the shortcomings of the available IEC material included use of 'foreign' persons in the illustrations, incomprehensible language, complex terminologies in the write-up, insufficient quantities for distribution, and irregular delivery of the material for distribution of the same.

The researcher acquired the available IEC material at the time of the research that was in use towards lifestyle diseases prevention and management from the SCHPO and conducted a detailed visual analysis of the same, based on literature reviewed on well-designed communication material that is target-specific. Samples of these IEC materials in form of posters and fliers are as illustrated in *Figures 4.3, 4.4, 4.5 and 4.6* below.

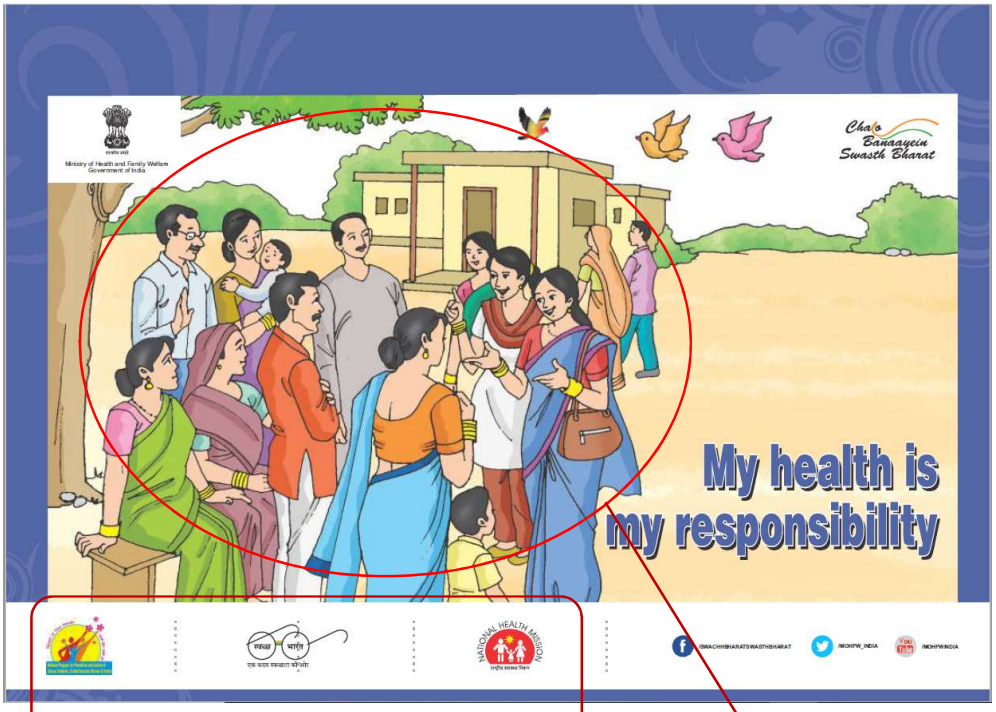

Figure 4.3: Poster promoting Healthy Lifestyle with people of Asian Origin Source: Kamukunji sub-county

The Logos of the sponsors of this campaign are all Indian based institutions and as such the poster is not target-specific to the Kamukunji Community members

People of Asian Origin have been used in this Poster and as such do not relate to the audience who this advert is intended for.

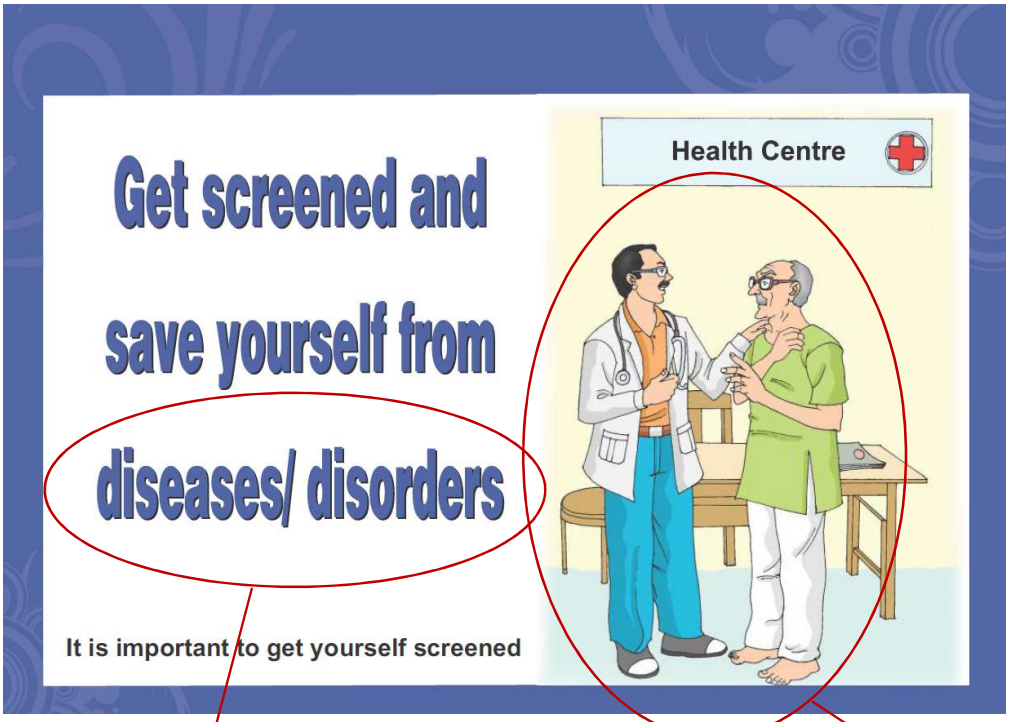

Figure 4.4: Poster promoting cancer screening of an older age group and of a different ethnic origin

The terms 'diseases/disorders' used here is NOT specific to what exactly is being screened, yet this poster is advocating for screening of NCDs.

The visuals displayed here are of an older person of a different ethnic origin - Asian. This does not resonate well with the target audience as they believed that NCDs cannot affect them based on the illustration displayed. As such it is necessary to have an image that will relate with the intended end-user.

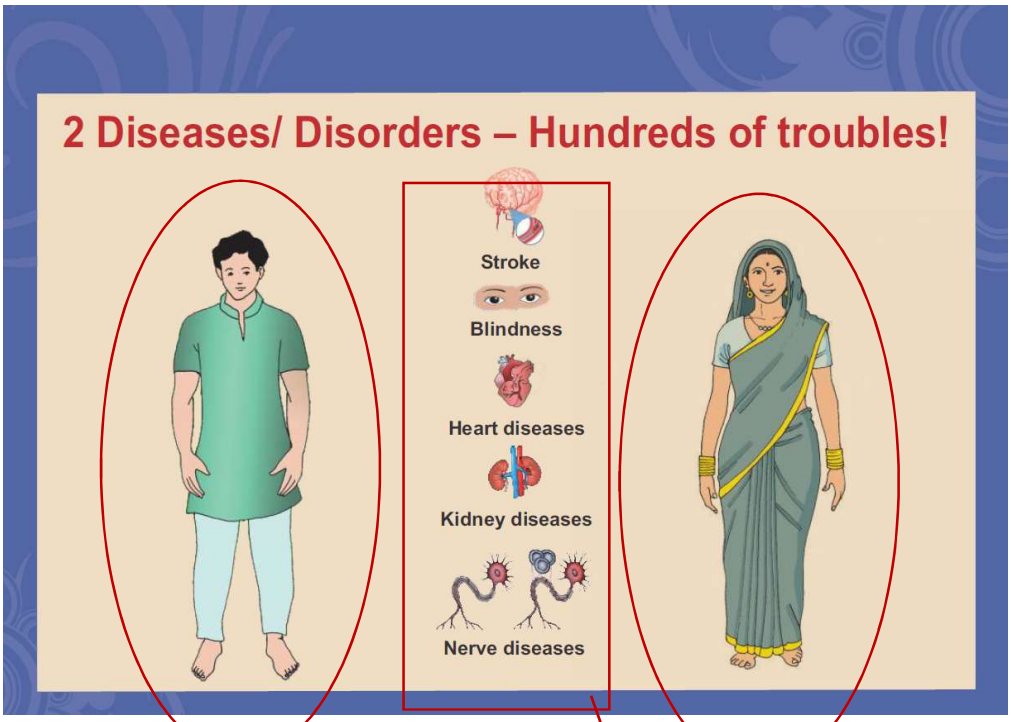

Figure 4.5: Poster highlighting effects of NCDs with people of Asian Origin

The use of visuals of Asian Origin does NOT relate well with the intended users of this poster, and as such the end-users of Kamukunji Community do NOT take this poster seriously. This is because based on these visuals, they believe that they are not likely to acquire NCDs as these are diseases for Asian people.

The language used here is slightly complex for the end-users in Kamukunji, and does NOT consider ALL the tribal affiliation of the community members there-in. A range of languages would communicate better to all members within the community, considering their varied literacy levels.

The posters discussed above were all received from the sub-county health promotion officer and have been used in the past in health education and training of the CHVs on lifestyle diseases prevention and management. The posters were issued by the Ministry of Health (MoH), Kenya. As seen the messages and visuals used are all described by the community members as 'foreign' – people from a different race - and as such are not ideal for the audience or community in which they are intended for. The proposal by the health promotion officer was that the material needed to be user-centered so as to relate to the inhabitants of Kamukunji and in turn promote positive health-seeking behaviour.

Figures 4.6 and 4.7 below illustrate flip charts received from the MoH (K) by the sub-county health promotion office that are used to educate the CHVs about preventive measures for curbing lifestyle diseases. As seen, a balanced diet has been proposed as a way of living a healthy lifestyle. However, most foods illustrated in the posters are beyond the reach of the community members of the community because of the cost of purchasing them – considering majority of the population is of a low economic status. Additionally, the SCHPO noted that some of the foods illustrated were foods of Indian origin and as such their availability in the local market was almost impossible. These promotional material in essence fail to deliver the intended message(s) of 'Balanced diet is the key to healthy lifestyle'.

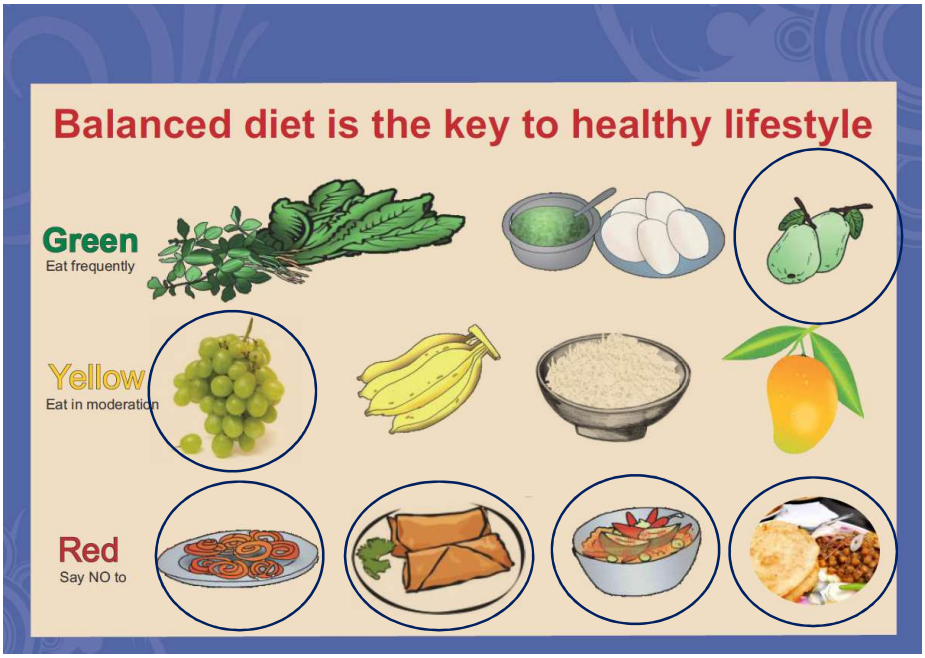

Figure 4.6: Flip chart illustrations of foods proposed for a healthy lifestyle – with the circled bits showing the foods that are not comprehensible or accessible to the community members of Kamukunji sub-county.

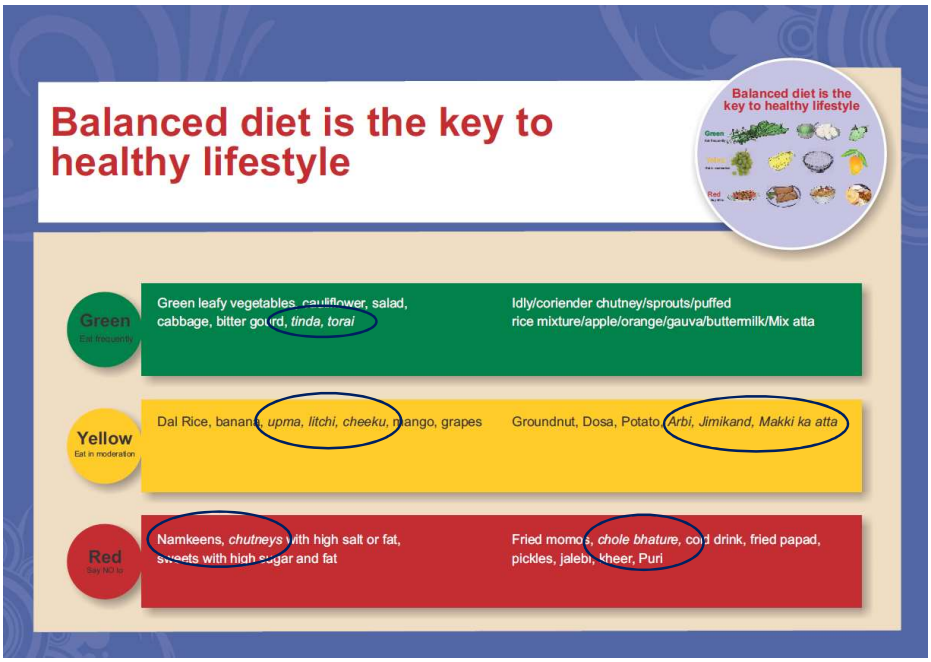

Figure 4.7: Flipchart showcasing foods towards a balanced diet for a healthy lifestyle – with the circled areas highlighting foods of Indian origin

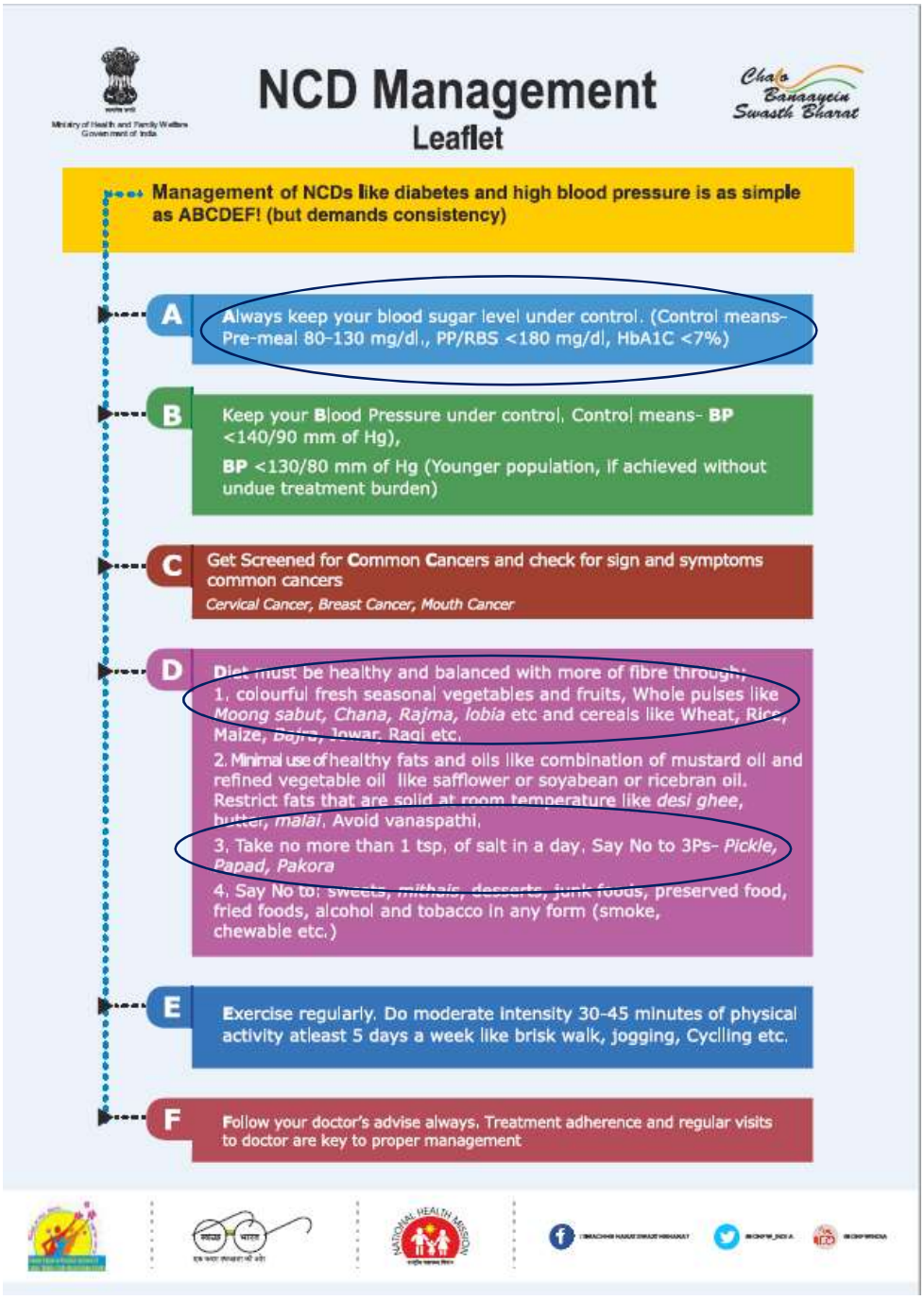

Figure 4.8: Flier illustrating the management of NCDs – used by Kamukunji sub-county health officers to train the CHVs. Highlighted in coloured ovals are areas of concern as mentioned by the health officers. E.g. Indian terms and technical medical language.

According to the sub-county clinical officer (SCCO), who is in charge of lifestyle diseases management in the sub-county, misdiagnosis in the region was a huge challenge in treating these diseases and related ailments. Majority of the community members who sought treatment at the facility came with a different diagnosis of disease from local privately-owned clinics, having sought treatment there first. The officer mentioned that many cases were referred to the health facility by the CHVs but majority came in too late in the disease life-cycle. This was a major challenge as they came in quite sick, having taken medication dispensed in those private clinics for misdiagnosis. Reversal at this stage was too late and the best they (SCCO) could do was refer them to Level 5 hospitals. The SCCO recommended that increased awareness on various lifestyle diseases would go a long way in reducing the incidences of these ailments.

4.5.2 CHVs Involvement in Health Promotion

The participants at the community dialogue and the house to house visits all agreed that the role of the CHVs on information dissemination on health matters is very critical. The participants all agreed that more needed to be done by the CHVs and those in charge of them in facilitating them towards better health service delivery. Over 50% of the community members noted that the CHVs were their first and most reliable source of health information. However it was noted that more education was needed and the teaching aids were necessary in the education process. Key areas mentioned included, increase in their numbers so they could cover more households and give occupants more time, incentivizing the CHVs and providing better training aids and tools to help them disseminate the health information across in a better and more proficient manner.

The community members appreciated what had been done so far by the CHVs but encouraged the administration of the sub-county to organize and conduct more trainings through community dialogues and sessions such as *barazas*. The

community members also called for more community awareness drives and improved medical services within the local health facility in the sub-county.

4.6. Resource Accessibility and Management

4.6.1 Inadequate Health Promotional Material

The sub-county community strategy coordinator (SCCSC) together with the community health administrator (CHA) supported the views of the SCHPO on challenges regarding health promotion and awareness of NCDs in the sub-county. They jointly acknowledged that they had limited resources to conduct proper training to the CHVs because NCDs were not considered a priority disease in the community. They however noted that there was increased reporting of incidences of this burden of disease, specifically Cancer, HBP and Diabetes; a growing concern among the community members of Kamukunji. The biggest challenge encountered was that these diseases were discovered too late in the disease life-cycle and could have been largely prevented or controlled if proper awareness programmes were in place.

Lack of appropriate IEC materials and proper training manuals to educate the CHVs, as reported by the health officers, was viewed as a major hindrance to efficient health communication, despite having well informed health educators within their facilities. Trainings and information dissemination to the CHVs was done in form of one week class sessions where the CHVs were asked to take down carry home notes, that they would thereafter use as their referral notes when visiting households. The challenge they encountered with this is that they were not sure if the CHVs got enough information that could be used to correctly advice the community members they visited in the households. This was experienced in unreported cases or inefficiency in the referral system to the health facility. The officials added that some of the patients who were referred to the health facility came in very sick or with the wrong ‘diagnoses’ by the CHVs.

Limited or poor IEC material when conducting their trainings with the CHVs, as illustrated in *Figure 4.8* above are is an example of a flier they shared that they have used in previous trainings with the CHVs. They admit to the inappropriateness of the material considering that some of the information therein is too technical for the CHVs where medical terms are used and Indian terminologies highly emphasized.

The CHVs also felt that they needed relevant educative material to support their trainings to community members. As is currently, they educate and offer advice they have based on the short notes they write down during the trainings done by the sub-county health officers. The CHVs believed that this method had proven to be a challenge as sometimes they did not have answers to offer the community members and ended up referring the members to the health facility, in cases where they would have offered first hand advice. This had led to some of the community members doubting their delivery of efficient and relevant health information.

4.6.2 Limited Service Proficiency by the Health Facility

The CHVs acknowledged the presence of a county-owned facility within the community. They however added that despite the facility having health officials, ranging from clinical officers to nurses, the facility was ill-equipped to treat majority of the ailments that the community members suffered from. Equipment like basic medical first aid material, medicines and laboratory services were almost non-existent. As such, the community was forced to seek treatment in other privately-owned facilities. The main challenge of this was that the community members they served were in dire financial scarcity. More than 60% of the population in Kamukunji are mostly low-income earners and cannot afford basic medical services, and as such could not afford the medical fees at other privately-owned health facilities as the services at Biafra Lions' Clinic were offered free of charge. This left many of the inhabitants within the community suffering from treatable ailments until they sadly passed on.

The CHVs jointly agreed that the quality of treatment offered at the clinic was wanting. They claimed that most diagnosis was shallow leaving people getting treatment for anecdotal diseases such as malaria that could easily be diagnosed and treated. The CHVs were of the opinion that these issues could be curbed if they were more empowered to allow them handle certain cases of ailments. Armored with this kind of empowerment they would be more effective so that people would not infer to supernatural causes and witchcraft for diseases that they did not understand as has often and increasingly been the case.

It was also notable that the health facility had a stand-by ambulance whenever emergency cases were reported by the CHVs to the health facility via the community members. However, they added that access to the one available ambulance was a challenge because the community was large and as such several cases reported at once would be a major challenge to tackle. They requested that additional ambulances be added or alternatively the health facility be better resourced (both staff, equipment and medicines) to be able to handle these kind of scenarios. They admitted that several people had died because of this inadequacy.

4.6.3 Inadequate Human Resources and Incentives

The CHVs acknowledged that most community members knew about their services and regularly called on them seeking advice on various health issues. However, there were appeals that more trainings and incentives should be delivered to get more people to volunteer to ease their current burden of service. As is currently, there are only 38 CHVs serving over 50,000 households in Kamukunji. This is preceded by the fact that they are expected to cover a maximum of 50 households per month, the monthly target set by the sub-county health officials. However in certain cases they ended up covering up to 200 households due to the fact that the demand from the community exceeded the number of health volunteers in the community. They mentioned extreme cases where residents would wake them up in the middle of the night with emergencies which they had to attend to. These

night calls exposed them to insecurities as access to those households were not facilitated. They however say that the cases of insecurities towards them have not been extreme as people have come to know and respect them and the help they offer.

The CHVs as previously mentioned conducted health training within the community as a voluntary service. They did not receive any incentives or monetary rewards for their services. Despite being a passion they held, the CHVs said that they still needed to work to support themselves and their family members and thus sometimes compromised on their service delivery because they had to create some time to make an income.

4.6.4 Insufficient Training Methods and Tools

In spite of many community members having acknowledged and appreciated the role of the CHVs and continuously reaching out to them, there was only so much that they (CHVs) could do to help with their limited skills. The CHVs appealed for in-depth trainings on lifestyle diseases such as cancer, mental health, diabetes and hypertension which they said were on the increase in their community. This they believed would allow them sensitize the community effectively and create more awareness around these illnesses. They also suggested that cancer patients should be better informed on how to prevent or manage their conditions and these can only be effective if they (CHVs) are also well trained on them, alongside having relevant health information material they could use as reference.

In the face of all their trainings and experiences the CHVs still felt that their knowledge was still quite limited given the kind of medical tasks they handled. Although sometimes having to deal with issues of NCDs they majorly focused on communicable diseases, expectant mothers and child immunizations within the area. The group unanimously felt that over time they had been taught sufficiently on how to handle diseases such as HIV/AIDs, family planning and tuberculosis

(TB). This knowledge had been very helpful in sensitizing the population about these diseases and educating those with this condition on how to manage them. This had a very positive impact on the community (decreased prevalence) and they felt that lifestyle diseases should also be handled with such vigor as they are just as terminal as HIV and TB.

The CHVs noted that their repeated training was specific to certain diseases and conditions and not a holistic approach to all or majority of ailments. This method of training did not seem to appeal to them and they suggested that the teachings be done on a compounded general basis so that an individual could handle different cases with the necessary competence. In support of this they exemplified this stating that, the community members consulted their services and confided so much in them but they (CHVs) shied away when one could not handle a certain condition that they were not knowledgeable about; and as such were forced to refer the patient to another CHV, whose availability was unknown. In such instances, the community members would opt out of seeking the CHVs' services and suffer because of the fear of disclosing their health status to a different CHV.

The health officers additionally noted that the CHVs needed longer training periods, proper training manuals and detailed and well-designed reference IEC material so that they could properly diagnose ailments and in the case where they (CHVs) were unsure, they would then refer the patients to the health facility.

Post psychological trauma was another major challenge that the group mentioned they (CHVs) have had to deal with after handling extreme cases such as deaths. The CHVs do not undergo any psychological training on how to get over certain situations neither are they offered counselling services after such trauma. They mentioned have mental torture when such cases occur and have to figure out how to deal with the disturbances. As such several CHVs have since resigned from this voluntary service. They also reported that the demand of their services is so high that they rarely get a chance to take a break or a vacation. These situations

sometimes get so intense that they focus so much on the community needs that they forget their own personal needs and families.

4.6.5 Lack of Branding and Identifiers

The CHVs raised concerns that some members of the community do not readily and willingly accept them into their households. They said this was due to insecurity concerns in the community and as such people were skeptical about just welcoming anyone into their households. However, in recent times this has changed as people have become familiar with their faces as the health advocates of the community. Additional issues such as an ideal dress code for the trips they made were of concern. The CHVs mentioned that the terrains they had to pass were very unfriendly especially during the rainy season and the clothing they had did not do justice to them as illustrated in *Figure 4.14 below*. They requested for weather protective gear such as gumboots, raincoats and umbrellas to make their work easier.

The CHVs proposed some form of identifiers (like identity cards or badges) and branded apparel or uniforms as this would be effective in communicating their presence and services to the community they serve. They said they needed something that would act to set them apart from the ordinary community members, with some adding that they use branded aprons from previous health campaigns as identifiers when visiting the household as illustrated in *Figure 4.15*. Lack of identification has been a challenge, especially when they escort patients to public hospitals and are stopped from leaving the patient in the hospitals despite the fact that they are not related. Most hospital administrations assume that they are relatives of the patients trying to abandon them in hospital.

Figure 4.9: A CHV displays the shoes he uses during the household visits in Kamukunji sub-county. Source: Author (2018)

Figure 4.10: A CHV displays the apron she uses to identify herself during the household visits in Kamukunji sub-county. Source: Author (2018)

4.6.6 Poor Data Recording and Management

Poor data recording of cases of lifestyle diseases within the sub-county, as mentioned by the SCCO was also a huge challenge in the fight against lifestyle diseases in Kamukunji. The CHVs were issued with a data recording sheet for various ailments when they visited the community members during their house-to-house visits. However, with poor training on identifying symptoms of lifestyle diseases, the CHVs ended up filling wrong or inappropriate data in the provided sheet.

The data reporting from the households by the CHVs is currently recorded on a printed out form ('service delivery log book') labeled 'MOH514' *(as indicated in Figure 4.12 below).* The form targets all the members of the households and various health services. The CHVs are required to fill out the details accordingly based on what they observe and receive from the household members. However, it is notable that the section on lifestyle diseases is very small and poorly detailed. The form highly emphasizes on Maternal, Neonatal and Child Care (MCNH) and CDs and a very small section on NCDs. The CHVs felt that this form should be split so that different diseases and health issues are recorded separately for proper examination. Alternatively, the form could be expanded so that proper detailing and analysis of health issues per household are captured efficiently.

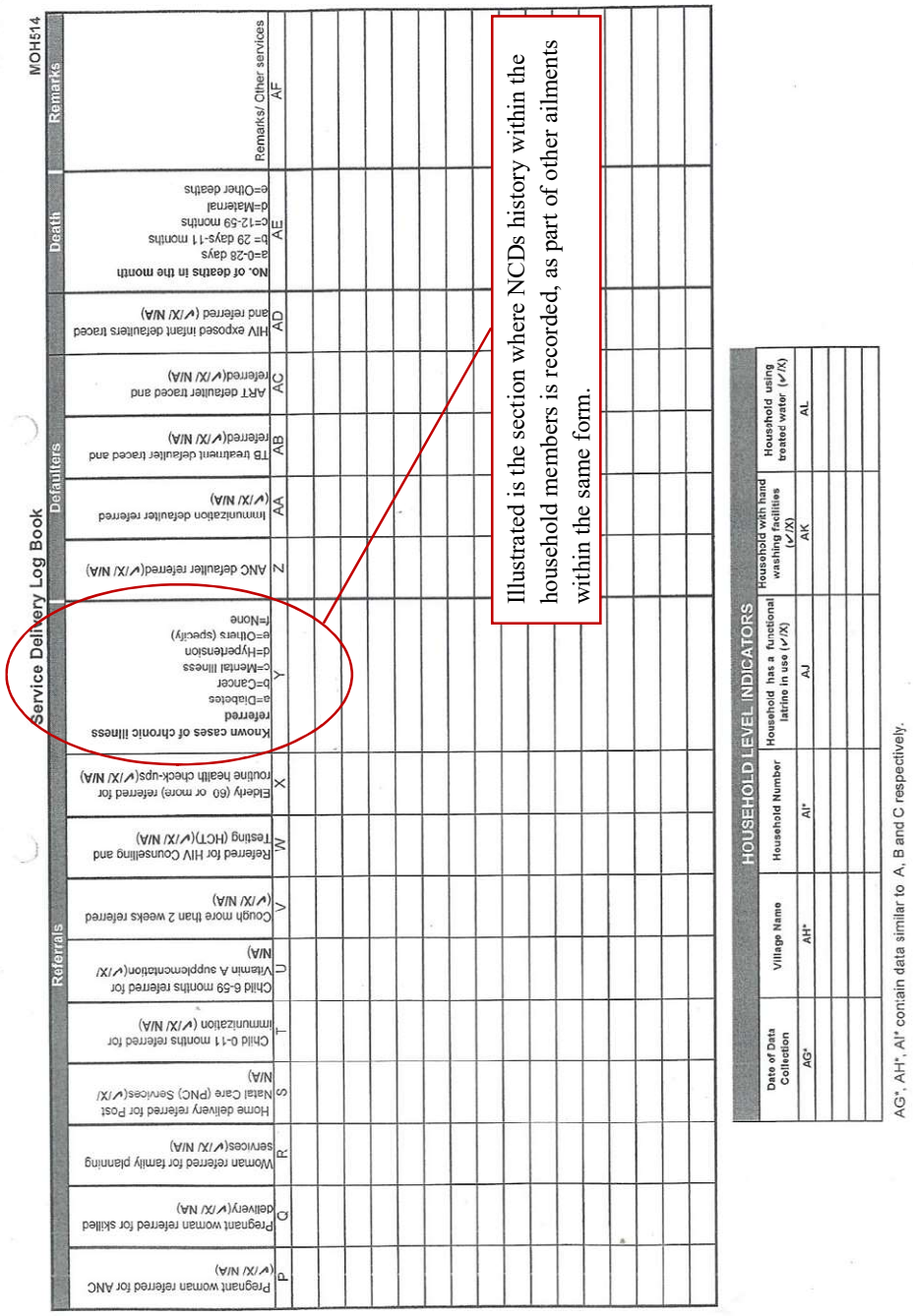

Figure 4.11: The form labelled MOH514 from the 'service delivery log book' used by CHVs in reporting health status of household members during the house to house visits

4.7. Interventions: Collaborative Approaches towards Health Promotion

4.7.1 Proposals by CHVs to address key challenges

Amongst the preferred methods of communication by the respondents, house-to-house visits stood out compared to community dialogues as this method was seen as personalized. The respondents felt that this method allowed for unrestricted talk to the CHVs on a one-on-one basis as there was more privacy in their discussions. People were shy to publicly ask questions about health related matters and this intimate and private sessions allowed them seek as much information as they needed. However, the respondents felt the time fixed to each one of them during house visits was minimal (about 20 minutes), and also felt that the CHVs had no answers for some of the queries they had. This they blamed on poor information resource on the side of the CHV and as such requested that the CHVs get more training or have training aids that would assist them accordingly.

Other communication channels proposed by the respondents included continuous community outreach programmes running through the year, community health talks with assistive aids like IEC material they could take home with them, alongside well-equipped health facilities.

Figure 4.12: Community Health Volunteers share their experiences on their health service delivery with the Researcher. Source: Author (2018)

To address the above mentioned issues, a few suggestions were made by the CHVs;

i. **Improved Communication Channels:** Better communication about various lifestyle diseases was proposed to avoid misconceptions amongst the community members. This was exemplified by a past campaign in the community on circumcision that saw a majority of men, even elderly ones, go for circumcision after they understood its importance. This proved that communication is key in preventing fallacies such as associating breast cancer to witchcraft, as well helping understand various diseases and measures that could be taken towards their prevention and management.

ii. **Socio-Cultural Issues**: There is the gender perspective that should be considered in trying to address this issue, stating that men feel freer expressing their illness to fellow men than to women especially with cases of sexually transmitted diseases and male-related cancers like prostate cancer. As such, an increase in CHVs of male gender would help regulate this.

iii. **Upcoming newly identified NCDs:** The CHVs additionally reported that mental health issues were getting rampant within the community. They attributed this to failure in relationships and marriages, as well as factors that surround these social institutions. Other circumstances they attributed mental health to was unemployment, and drug and substance abuse. They noted that they had not been trained on how to handle such cases and the health facility within the locality was also not well equipped to handle this issue – both in material and human resource.

iv. **Improved Data Collection Tool:** Introduction of a digital platform for data collection was also made by the CHVs when recording their findings during the household visits. They mentioned a previous research done by a private funder, whose interest was in MNCH, where they (CHVs) were provided with smart phones in which they would

record data from mothers on the health status of their children. The data was captured on the phones and the information fed into a server, in real time, and analysis was automatically done by the data analyst based at the station. The CHVs found this an easier and more accurate method of data collection and requested if this kind of system could be adopted by the Kamukunji sub-county. This would greatly ease the burden of carrying around bulky papers in form of the 'MOH514' forms to be completed during their household visits, as well as safe keeping of the data collected.

4.7.2 Joint Proposals by Stakeholders in addressing key challenges

The Design Thinking workshop was a culmination of the research that saw the key stakeholders come together to identify key problem areas and jointly come up with solutions feasible in the fight against lifestyle diseases prevention and management in their community. Key areas extensively discussed during the design thinking workshop involved; understanding patient and staff experiences (both health practitioners and community health volunteers), delving into the issues affecting health-seeking behaviour among the community members and coming up with tangible solutions towards the issues.

The responses from the workshop are discussed in detail below:

4.7.2.1 Health Awareness Creation

i. **IEC Material** – Proposals were made for new and revised IEC Material that would accommodate all the community members in terms of language, clear illustrations and ease of dissemination of information.
ii. **Audio/Visual Campaigns** – To deal with literacy among community members, participants proposed having simplified audio-visual communication to pass across health messages to community members.

iii. **Social Media** – Social media promotional messages were encouraged as a source of information transmission as it was found more than 90% of the community members had a phone. This form of communication channel could explored as a good avenue of encouraging the community towards improved health-seeking behaviour and regular medical checks.

iv. **Health Education** – It was agreed that the health officers together with the CHVs encourage more health talks within the community and proposed settings such as social halls and religious forums as a start.

v. **Community Health Screening** – This was seen as a challenge because of financial resources but it was agreed that participants can inform their community about any free health checks within or outside the community. In line with this, the sub-county officers agreed to reach out to potential funders to sponsor this kind of ventures.

Figure 4.13: Left and Right: A Sub-county official and a CHV respectively, display proposed visuals to be used in health promotion material towards lifestyle disease prevention in Kamukunji Sub-county. Source: Author (2018)

4.7.2.2 Health Training Methods/Styles

i. **Audio-Visual Displays** – The CHVs requested for improved teaching methods as that would help them in understanding the health topics more intensively. The same audio-visual material could then be shared in health facilities within the health facility in Kamukunji.

ii. **Training Manuals:** The CHVs requested production of customized training manuals that were disease-specific; which they could carry home and along with them during the house-to-house visits within their locality. This would empower their knowledge on health promotion towards disease prevention and management.

iii. **Engaging Activities** – The participants all agreed that the local CHVs could be exposed to other health trainings and medical camps that were outside their sub-county as a benchmarking effort towards improving quality of health care in Kamukunji. The health officers agreed to write proposals to private funders in a bid to include their CHVs in health education talks as a way of empowering them.

iv. **Skits –** It was agreed by the participants that skits and short plays can be used as a means of health promotion in any social gathering within the wider Kamukunji area. This would be used as a form of health education especially in settings where literacy levels were limited and NCDs were stigmatized.

Figure 4.14: Above and Below: Sub-county officials and CHVs act out skits proposed as one of the more effective ways of health information dissemination towards lifestyle disease prevention in Kamukunji Sub-county. Source: Author (2018)

4.7.2.3 Socio-Cultural Barriers

i. **Language:** The participants agreed that all IEC material and training material should be customized to fit the diverse population within the community. In line with this, the CHVs were encouraged to bring on board colleagues who are from this various ethnic backgrounds to facilitate this process.

ii. **Religious and Socio-cultural barriers** – It was proposed that religious and community elders can be approached in helping pass across positive health messages and educated on the value add these messages would have to their community members in terms of improved quality of health.

iii. **Tackling Stigma** – Intensive health education and counseling would be provided by the CHVs and the Health Officers to curb stigma around NCDs as is the case with Cancer in the community.

From the DT workshop conducted as illustrated in *Figure 4.23* below, key issues such as social cultural barriers, language and religious barriers, poor awareness programmes and inadequate training material have all contributed to increased prevalence of lifestyle diseases in the Kamukunji sub-county.

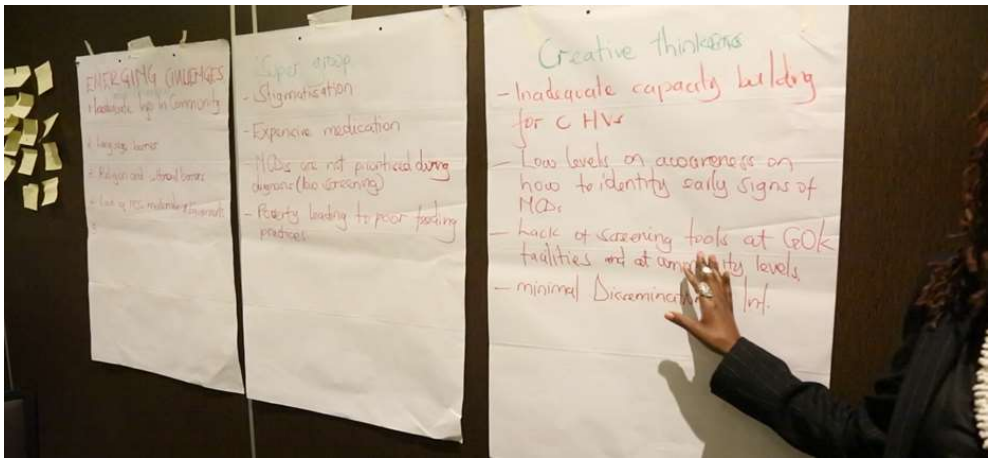

Figure 4.15: A summary of the proposals given by the joint stakeholders at the Design Thinking workshop that informed the population-led health communication strategy towards NCDs disease prevention and management. Source: Author (2018)

Key messages that emerged from the discussions highlighted pointers that would lead in helping reduce the prevalence of NCDs in Kamukunji sub-county and subsequently any other sub-counties with a similar profile. Participants identified and agreed that collaborations and involvement by key health stakeholders, community participation and engagement was very critical in decision making towards tackling societal issues.

At the end of it, the DT workshop produced a guide to a feasible population-led health communication strategy, co-created and co-designed by individuals within the target community alongside the related front-liners in the health system. A well-structured public health campaign using design thinking as a tool, was identified as a means of helping communities achieve healthy lifestyle behaviour and increase uptake of health-seeking services in curbing the incidence of lifestyle diseases.

5:0 CHAPTER FIVE: DISCUSSIONS AND SYNTHESIS

5:1 Introduction

Major factors that have affected effective awareness and access to health education and promotion to communities include; irrelevant content in the Information, Education and Communication (IEC) material; conflicting health education messages; messages with language barriers and messages not considering the cultural beliefs of the target audience (Parker et al., 2012; Govender, 2014). Thus it is critical to involve the audience that an intervention is being designed for.

Key issues identified in this research such as social cultural issues, language and religious barriers, poor awareness programmes and poor or lack of training material have all contributed to increased prevalence of lifestyle diseases in the Kamukunji Sub County. Community-based interventions involving individuals and the community in framing and designing health promotion and communication can be considered as a new approach in tackling a range of health issues.

The main objective of this research was ***to co-design a population-led communication strategy with CHVs and relevant healthcare stakeholders that can be used in the prevention and control of NCDs amongst the urban 25-59 year olds living in informal settlements in Kamukunji, Nairobi County***. Findings and data analysis of this research has been described in detail in the previous chapter and further discussions thematically discussed within this chapter.

5.2 Defining the Problem: Healthy Living Practices

The first objective of this research was ***to investigate how community members in Kamukunji sub-county maintained a healthy lifestyle towards curbing lifestyle diseases*.** The reactions extensively discussed in the previous chapter, clearly show that the community members had a very rudimentary understanding of what healthy living entailed. It was key to note that despite being specifically questioned about healthy living in curbing lifestyle diseases, the responses were in line with

general lifestyle choices. Some of the answers highlighted habits such as sexual irresponsibility and consuming of contaminated foods as contributors to acquiring lifestyle diseases, which as discussed in the literature are not among the major risk factors of this burden of disease.

5.2.1 Health Education and Health Literacy of Community Members

Efficiency of communication is very key when trying to pass across health promotion messages. An area of concern is as highlighted above whereby use of certain terms when defining health, can be misinterpreted. For example, the term 'lifestyle diseases', occasionally alternate with NCDs was seen as a challenge among the community members of Kamukunji sub-county. Lifestyle as defined by the study population, was understood as any habit that one lives by, regardless of circumstances under which the NCD is acquired. Major factors that have affected effective awareness and access to health education to communities include; irrelevant content on the Information, Education and Communication (IEC) materials; conflicting health education messages; messages with language barriers and messages not considering their cultural beliefs (Parker et al., 2012; Govender, 2014).

Low level of knowledge by the community has been seen as a major hindrance to effective health promotion for most chronic NCDs. (Schillinger et al., 2002). Health promotion and education is very relevant today in empowering individuals and communities take action for their health. According to Kumar and Preetha (2012), health education is about providing health information to individuals and communities and providing skills to enable them adopt healthy behaviour voluntarily.

Schilinger et al (2002) states that limited health literacy when addressing disease prevention and management can limit the success of such a venture. It is necessary that literacy levels of the end-user are clearly determined at the beginning of

designing a health promotion programme to avoid difficulties in information dissemination.

5.2.2 Surveillance on Lifestyle Diseases Risk Factors within California Ward, Kamukunji Sub-county

Urbanization, sedentary lifestyles and unhealthy dietary patterns have been shown to be the contributors of the four major NCDs risk factors; tobacco use, alcohol abuse, increased unhealthy dietary practices and decreased physical activity (Maina et al., 2010, Dalal et al., 2011, Kumar and Preetha., 2012). Research has shown that several factors determine any of the four major NCDs in Africa and thus it is crucial to ensure that the main risk factors, shared amongst these NCDs are addressed to help curb prevalence of these conditions.

In spite of the study area for this research being in an informal settlement, the inhabitants were at risk of unhealthy diets and abuse of tobacco and alcohol. Challenges such as affordability of foods offering a balanced diet (due to affordability), saw majority of the community member eat the same diet on a daily basis. It was also noted that there was increased salt and oil intake of the community members, as supplements used to improve the taste of the 'same daily diet' they ate. As proven from studies, high salt intake and fatty foods are a huge contribute to hypertension and diabetes, which are some of the NCDs prevalent in this region.

5.3 Demystifying the Problem: Understanding Lifestyle Diseases

The second objective of this research was ***to establish the level of knowledge of community members within Kamukunji sub-county concerning lifestyle choices***. On intentional explanation on what lifestyle diseases were, and a deep understanding of risk factors associated with NCDs, the community members were able to describe in detail their level of knowledge on NCDs and lifestyle decisions they made towards maintain a healthy lifestyle.

Poor dietary habits and physical inactivity have been identified as key risk factors to almost all NCDs (Unwin et al., 2011). As a result of increased production of processed foods, rapid urbanization and improved lifestyles, Kenyans have changed their food preference and eating habits to accommodate unhealthy diets high in fats, sugar and salt but low in fibre. It was noted from the research that respondents were familiar with poor eating habits as a contributor to acquiring one of either of the NCDs they were familiarized with. However, the extent to which these 'poor diets' affected them was not clear to them and as such were not familiar with the recommended daily nutritional intake required for a healthy lifestyle. Physical inactivity was also not a familiar topic with the responses, as they believed that by just moving around from one place to the other, they were fit enough to be classified as healthy. It was also noted that the concept of physical activity meant that one had to register to a gym, which according to the community members was too expensive a venture and seen as a luxury they could not afford.

Interventions such as effective health promotion programmes targeting these risk factors, could reduce this disease burden with efforts focused on healthy lifestyles (mainly healthy diets and physical activity). These risk factors are behavioural and can be prevented with change in behaviour and in turn reverse the chances of being pre-disposed to NCDs. Statistics show that each of these risk factors contribute to a large percentage of annual deaths and has been projected that if these risk factors are eliminated, up to 80 per cent of NCDs cases associated to them could be prevented. (Lim et al., 2012).

As a non-participant observer during the interactions of CHVs during their health information dissemination to community members, the researcher identified the following key issues that could be considered a hindrance to proper heath information and communication dissemination included:

1. Lack of training aids at the health talks and the participants heavily relied on information relayed by word-of-mouth by the facilitator.

2. Language used by the facilitator(s) was very technical. For example when talking about the standard blood pressure index and diabetes screening, the facilitator used medical terms (BP of 120/80, Glucometer etc.)
3. The Head Nurse was the main facilitator of the health talk as opposed to the CHVs, who ideally are expected to conduct these dialogues. It was evident that the CHVs lacked in-depth knowledge on NCDs and as such just participated in the session.
4. The Head Nurse (main facilitator) gave some misleading information on some of the symptoms of these ailments, e.g. mentioning that a symptom of cervical cancer, was where the itch was felt in the cervix and not the vaginal area. This is not a true statement as relates to literature about the major symptoms of cervical cancer
5. A lot of emphasis and concentration on specific illnesses/NCDs based on the participants present, with the assumption that those were the likely NCDs to affect them. The participants were mainly women and a lot of emphasis was given on breast and cervical cancers.
6. The term 'Lifestyle Diseases' which was a simpler term to use than NCDs was largely misinterpreted. Most participants understood it as literally how one lived their life – sexual irresponsibility and unhygienic behaviours – as noted by the responses they gave. Majority of the participants mentioned diseases such as Cholera, STDs and HIV/AIDS being among the common examples of lifestyle diseases.
7. Stigmatization of the NCDs especially cancers which were associated with family curses, witchcraft and supernatural spirits.
8. Text book knowledge was highly used by the facilitator; and he did not contextualize the food diets based on the participants' socio-economic status and circumstances under which they lived. An example is where the facilitator discouraged them from eating junk food and red meats; most participants were not likely to afford this kind of luxury. However, fatty foods and excess salt intake resonated well with the audience.

9. Most of the participants were eager to leave immediately the talk ended, as it was evident that most of the participants were present for the incentives given after the talk. It was also notable that the participants got fidgety the moment they realized the time they had agreed to sit in had elapsed, and they needed to get back to their normal routines/jobs. The community dialogues are limited to two hours maximum to allow participants' go back to their day-to-day responsibilities.
10. Gender balance in the dialogue was wanting. 80% of the participants were women with half of this number having toddlers with them. The session was interrupted by the kids running all over or by their cries.
11. The location of the talk had a lot of noise pollution, being that it was surrounded by many *jua kali* businesses such as carpenters, mechanics and welders. A bus terminus was also stationed outside the compound and the noise from the bus operators and vehicle traffic was a hindrance to proper communication.

5.4 Refining the Problem: Efficiency of Health Promotion Programmes

The third objective of this research was ***to explore existing health communication channels within Kamukunji sub-county and synthesize with new proposed ones in the prevention and management of NCDs***. As discussed in the previous chapter, stakeholders all gave varied communication channels that were used in information dissemination of NCDs prevention and management. The responses were clustered based on the information source and the recipient of the health promotion message.

5.4.1 Profiling the Target Audience – Community Engagement

Intended audiences need high quality information if they are to make informed decisions about their health (Griffin et al., 2003). Creating an effective health communication message, specifically directed towards behaviour change, takes several things into consideration. Both structural and content elements of messages

determine how well messages are encoded, stored and retrieved at a decision point (Lang, 2006).

Social cultural challenges were frequently mentioned as barriers to proper health communication by the CHVs and the health officers of Kamukunji sub-county. Some of those mentioned included language barriers, religious disparities and gender related issues, whereby the male gender would not be attended to by a female health worker and vice versa. The region also having members from different ethnic backgrounds was a challenge mentioned as most members preferred being attended to by people from similar ethnic upbringing.

In this case scenario, it is proposed that community elders and leaders intervene to educate the people on cohesion when tackling societal and health issues, as they were all one. Need for bringing people together with one common goal, of improving quality of life, was critical in promoting health in Kamukunji sub-county.

5.4.2 Classifying Proficient Health Communication Channels

Health Communication has been shown to increase the intended audience's knowledge and awareness of health issues, problems or solutions (Freimuth and Quinn, 2004). Health Communication can also influence perceptions, beliefs and attitudes that may change social norms, prompting action towards behaviour change, whilst refuting myths and misconceptions. Public health communication campaigns have been credited with promoting awareness about the risk of diseases – both chronic illnesses and infectious diseases (Guttman et al., 2004). However, how effective these campaigns are, especially in changing health-related attitudes and behaviours, has been a subject of debate. Several studies have been conducted around the effectiveness of various channels of mass media campaigns in the promotion of Public Health (Noar, 2006).

Revised or improved IEC material towards effective health promotion on NCDs prevention and management was suggested as a means of improving the knowledge base of the community members of Kamukunji sub-county. This required consideration of the language used, clearly illustrated visuals and easy access to these material. Additionally, it was proposed that various media channels be considered in information dissemination of NCDs prevention, some of which included use of audio and visual content on screens within health facilities and local television and radio stations within Kamukunji. Social media campaigns via Facebook and WhatsApp were also suggested as a way of reaching the youth in the locality, as it was noted that majority of the targeted audience had smart phones in which they accessed the internet.

Krenn et al (2014) reiterates that use of a combination of communication channels in information dissemination of health promotion activities maximizes the exposure of health issues as no one channel reaches every intended audience. As such, there is need for innovative and better strategies in health communication programmes that considers evidence-based approaches in targeting audiences that have socio-economic and socio-cultural influences at both individual and community levels.

In contrast with those interviewed during the community dialogue, it was clear that the participants engaged during the household visits were less knowledgeable on lifestyle diseases. This was of great interest to the study, as this showed that the dialogues are seen as quite a useful tool of health information as more time is assigned for discussions and information seeking on disease prevention and management. Additionally, the presence of a health officers at the community dialogue improves the information relayed, because a more 'knowledgeable' person is present to address any health needs the community members may have.

From the findings it is clear that if the CHVs were well facilitated in terms of proper training aids, they would be able to educate the household members on NCDs and

their risk factors and thus enable the community practice better living habits and promote appropriate health-seeking behaviours towards the prevention and management of lifestyle diseases.

5.5 Solving the Problem: Human-centered Design Intervention

The fourth objective of this research was ***to develop a population-led health campaign framework through a human-centered design intervention***. Throughout this research, stakeholders were encompassed as part of the process of identifying a health promotion strategy that would help in reducing the incidence of NCDs in their community, with the end-users in mind. Diverse challenges and a range of proposals to these challenges were identified, and these were used as stepping stones to designing an effective health promotion strategy. Key to note was that the stakeholders identified in this research had never previously worked together on such a venture, and as such appreciated the role each played in coming up with a strategy that they all believed would work towards their common goal.

5.5.1 Role of Human-Centered Design in Public Health

Human-centered design methods and practices must always be adapted to the cultural setting in which they are applied (Winschiers-Theophilus, Bidwell and Blake, 2012.) In context to this research, health services in county hospitals, (like in the case of Kamukunji sub-county) have to consider the cultural attributes of the inhabitants when designing health programmes that will suit their needs and answer to their problems.

Design thinking (DT) methodology is an unexplored approach in improving health care in the fight against NCDs in urban informal settlements. The fight against NCDs is still largely based on providing curative and management services and as such is not suited to the increasing burden of chronic disease that now requires preventive services. Thus, there has been dramatic increase in financial health spending in households, especially in the study area of Kamukunji. Rising health

spending is a concern and therefore there exists a dire need to innovate both the practice and delivery of healthcare (OECD 2011). This is a unique opportunity for social innovation to propose models towards improving the sustainability of health services towards creation of awareness of NCDs through efficient health promotion programmes.

5.5.2 Role of Co-Design in Public Health

Co-design in the public sector is a new and growing area in the resolve of public health challenges. Through a multi-disciplinary approach, health practitioners, community health volunteers and service designers can help tackle diseases by co-creating health promotion programmes that are valuable in the fight against NCDs in urban informal settlements. Disseminating knowledge through participatory research will nature designers to shape their approach and tools to better collaborate with public sector and other relevant stakeholders (Ehn, 2008)

Co-Design of health promotion programmes encourages participants identify 'rules of thumb' that appear to produce positive experiences towards health service provision. As such common themes and areas of concern towards health promotion are suggested for the 'design team'. The 'design team' sees these concepts and use them to put something down to take it further to the prototyping phase, as explained in the Design Thinking Process Model in Chapter Two, *Figure 2.5*

The core principles underpinning the co-design workshop conducted by the researcher was equity, understanding experiences of the participants and in turn improving health-seeking behaviour in the community. As such, the participants at the DT workshop were empowered on what co-design is and its relevance in solving societal challenges, alongside the role each participant played in the process.

5.5.2.1 Framing by Co-Design: Sharing Stories and Concept Mapping

Identifying relevant problem areas for design is especially challenging when working in a complex product-service system like the public service (Winhall, 2011). At the DT workshop, participants were grouped and asked to identify areas of challenge when tackling NCDs in their locality. The aim was to utilize design methods to support the CHVs in proper health information dissemination of NCDs in the community in which they served. The interest areas were identified and presented as design concepts. These design concepts reflected different framings of the problem areas which were later converted into possible solutions.

Participants discussed the benefits of making their perspectives understood by their fellow stakeholders, and enabling them appreciate others perspectives. It was recognized by participants that sharing experiences and concerns and constructing 'concept maps' had enabled mutual themes and identified areas of concerns towards health promotion activities.

"There is poor screening at community levels. Our outreaches are mostly curative… and if there is anything to do with NCDs, the BP screening machine is only one, thus not everybody is screened, and it is only the suspected case. So there is no mass screening for the population"

Beatrice Lugari, SCHPO

Participants were very keen in the co-design event to contribute their voices and recognition of their responses led to the stakeholders rethinking their focus on end-users as resources for solving problems instead of offering solutions on their behalf, as has been previously been the case. Throughout the whole research, it was evident that the co-design approach helped build trust among the diverse stakeholders by bringing them together face-to-face in co-design events that have a carefully designed structure and materials to help them address a common goal,

reduction of incidences of NCDs in their community through an effective health promotion strategy.

"Basically at the community level, there is low awareness on how to identify early signs of NCDs… there is also minimal dissemination of information from health care workers to CHVs"
Titus Khadudu, CHA

5.5.2.2 Empathy and Cohesion: Provoking discussions through Co-design

Outcomes from DT not only serve as suggestions of possible solutions but also aims at evoking debates and challenging people's preconceptions. Case in point, the Health Officers of the Kamukunji Sub-county for a long time believed that the CHVs were well-equipped (socially and psychologically) to counsel the community members, but from the joint DT discussions, it emerged that the majority of the CHVs had limited knowledge and skills on intra-personal communications with the community members. Socio-cultural barriers discussed in Chapter Four were identified as a major hindrance.

Participants supported the fact that sharing experiences via the DT workshop with relevant stakeholders helped build empathy and cohesion in the group. Recognizing commonality of experiences was of great benefit in identifying a viable solution to deal with the scourge of NCDs in the community. As such, in developing new techniques, methods or approaches, integrating all the participants' views or experiences and expectations into a workable communication strategy was fruitful, as each felt their views were appreciated and adopted.

5.5.2.3 Co-Design of IEC Material

Tailored communication and content matching produces a message corresponding to the needs and preferences of individuals. This is very critical in designing health

communication material as it attempts to direct messages to individuals' status on key theoretical determinants - knowledge, outcome expectation, beliefs and self-efficacy (Hawkins et al., 2008). With this background, a needs assessment needs to be done before starting an IEC campaign. This assessment provides important information about the target population and the kinds of materials people are likely to respond to e.g. for people with low literacy – you will want to use highly visual material to reduce the need for text.

Properly designed IEC material should ensure readability and visibility alongside being target-specific to the audience it is designed for; this includes adapting content material to make them appropriate to the local languages, cultural and religious beliefs. Alongside this, material should always be readily available in various formats or channels and updated regularly to suit the said target population. A range of materials, activities and approaches should be used as part of an IEC Campaign. It is crucial that CHVs and Health trainers have some material that they can reference to when conducting health promotion programmes. From the discussions with the CHVs, materials that were mentioned included Mobile Applications (Apps), Short Message Service (SMS) alerts, Digital Media Adverts and Short Video Screenings among others. Additionally, they mentioned social awareness creation through print media like Posters, Billboards and fliers displayed and distributed in public places.

Community awareness events were seen as a great influencer in health promotion activities. Use of a central venue with a stage for entertainment and room for CHVs and Health educators to provide information, counselling and screening opportunities were mentioned as a likely effective method for creating awareness about NCDs and related risk factors. The CHVs added that this could be a bi-monthly activity and given a tag – *The Community Health Action Awareness Day.* Despite having this, the CHVs mentioned that the health community drives currently are all-inclusive on health matters, with a major concentration on Mother-

Child Health and NCDs was not a majorly considered. They proposed that the health drives be disease-specific so as to fully inform the community members on a particular disease and give the attendees full information specific to each need.

Placement of IEC material is also very critical in order to reach the audience. For example, the print media should be placed in populated areas like schools, market places, religious settings and public areas. As is currently, the minimal promotional material that exists is mainly placed in hospitals where only those visiting this health facilities have access to. This is ineffective as the aim of the health promotion material is preventive and those seeking treatment at health facilities are already affected in one way or the other. Additionally, it is highly important to identify trainers and peer leaders who speak local languages and ideally are from the target population, in this case the CHVs. Engaging the right members of the community in identifying what material will save time and money – especially in a setting where locals are culturally or religiously conservative – like sex talks and other health related issues deemed personal – a positive deviant can be influential. IEC material are most effective when they reflect the interests and preferences of the local population.

5.5.2.4 Co-Design of a Health Communication Strategy

An IEC Campaign cannot be effective alone. Other components of a health promotion communication strategy should include face-to-face education and helping people know how to access information and services focusing on prevention, care and management of NCDs. Co-design of health programmes presents a great opportunity to engage the critical mass of people who are in the communities to adopt appropriate behaviour for health promotion and diseases prevention, as well as appropriate health-seeking behaviour. The success of this would result in reduction of the burden of disease in the community. This in turn would reduce the healthcare demands on health facilities, which are already

struggling to meet demand, and as such give health facilities a chance to be more efficient and effective in health service provision.

Figure 5.1 below illustrates a refined conceptual framework, with the research gap now filled. The proposed design intervention is conceived from literature, the findings and discussions from the research study and shows how co-design was used to achieve the outcome of the research, which was to design the a community-led communication strategy that would allow stakeholders design and implement a feasible and sustainable health promotion strategy towards the fight against lifestyle diseases in the area of study.

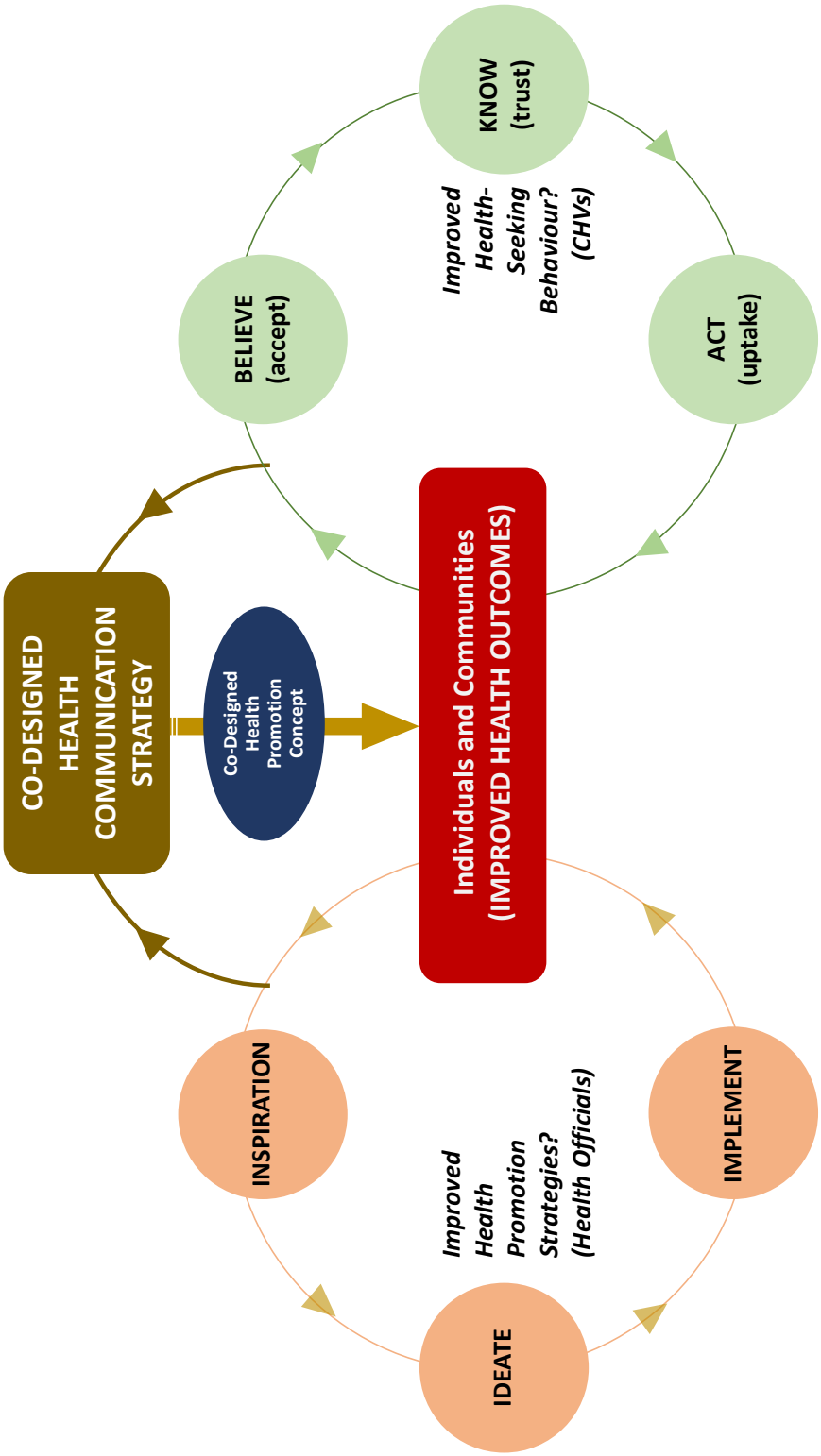

Figure 5.1: Revised Conceptual Framework showing the place of co-design as an intervention in the fight of lifestyle diseases, through a co-designed health communication strategy Source: Author's Construct (2019)

6:0 CHAPTER SIX:
CONCLUSIONS AND RECOMMENDATIONS

6:1 Introduction

Universal health care as inspired by the Kenya Vision 2030 seeks at providing a high quality of life to all its citizens. To break this down even further, this means that all individuals and communities can use promotive, preventive, curative, rehabilitative and palliative health services required. Additionally, the government aims at ensuring quality of these services that does not expose the citizens to financial hardship. While the Kenyan government has taken measures towards improved health-for-all, functioning health systems that include trained and motivated health workers, equipped facilities and efficient health promotion programmes are key issues that need major improvements.

Design competence in solving complex societal challenges is now valued in providing solution-oriented platforms for multi-disciplinary areas (Cottam and Leadbeater, 2004). Design can drive positive change and has the potential to improve people's lives by outing their need and aspirations at the center of any national development process. Schwartz (2016), adds that designers are passionate about making change in the world and are eager to partner with public health practitioners to drive innovation.

Public health challenges represent some of the most complex and important societal issues in any community. Viewing these challenges through a design lens can lead to new ways of engaging individuals and communities and new insights and interventions. Design research methods inspire new ways of learning about and engaging individuals and communities about their health (Schwartz, 2017). Co-designing facilitates creative collaboration among different stakeholders in the decision-making processes, who had not necessarily encountered each other in the conventional practices or professions. As design researchers, working as

facilitators in designing health promotion programmes is essential as we push ideas. However implementing this sustainable change in effective health programmes needs managers of the health system and CHVs to make a choice to pull those ideas forwards towards their implementation.

6:2 Summary of Findings

The overall objective of this research was to ***co-design a population-led communication strategy with CHVs and relevant healthcare stakeholders that can be used in the prevention and control of NCDs in informal settlements in Kamukunji, Nairobi County.*** This took a step-by-step approach, guided by the specific objectives of the research, in identifying the faults and challenges that existed in the health communication channels in curbing the prevalence of NCDs within the urban informal settlements of Kamukunji sub-county.

Challenges identified during the research were identified as contributors to the inefficiency of the designed health promotion programmes. Key among the challenges mentioned was the inefficiency of IEC material in terms of content matching of the messages and communication channels used. This was mainly because the end-users (the CHVs and community members) had no reference material of the same and the available material was not comprehensible to them. As such, the CHVs felt that they urgently needed to be involved in the design of these IEC material as they were directly involved in health promotion activities with the community members they served. They additionally felt that the sub-county health officers had not taken the role they (CHVs) play as health workers in the community seriously and wanted recognition when designing health communication programmes. As such, they felt they needed to be empowered to effectively play their roles as community health workers.

Co-design identifies processes and expected outcomes as part of designing improvements in a system. Thereafter these outcomes can be used in the evaluation

of the newly designed health system. During the DT workshop, what assuaged participants most is that all parties involved needed each other to move from an idea to a working product. The product could range from a promotional tool like skits showcased at *barazas,* to digital media played on televisions screens at the local health facility to target-specific training manuals for the CHVs to use when conducting their house-to-house visits.

6.3 Implication of Study findings and Contribution to Knowledge

6.3.1 Population-led Research through Community Engagement

The effectiveness of any methodology, tool or technique will always depend upon the people applying it and the enactment of power in context. Key benefits of a user-centered research identified from this research towards health promotion and the use of co-design include; encouraging participants to have strong ownership of change processes, ensuring that key decision-makers (including government and health officers) are fully engaged from conception of research, and developing stronger institutional cultures of participation.

6.3.2 Multi-Disciplinary Research

Prospects for acceptance of and increase in multi-disciplinary research has been showcased in this study. By engaging in more creative activities and increasing external input to participatory workshops and research designs, the varied stakeholders, who are from different professional backgrounds, can help improve challenges faced towards health promotion within their settings. Co-design and design thinking has shown that it is not only applicable to the development of innovative prototypes or frameworks but also to teams that have a true multi-disciplinary approach to overcome societal issues.

6.3.3 Policy Contribution and Implementation

The Kenyan Ministry of Health (MoH) has over the years been solely tasked with the role of providing health communication material to the various government-owned Health Facilities countrywide. However, since the devolvement of some government services to counties in Kenya, the county governments have been given the mandate to run their own health systems. The Nairobi County's Health docket currently faces challenges in financing most of their health programmes and as such, new and innovative methods that are considered cost-effective and sustainable are sought.

The joint workmanship by CHVs and Sub-County Health Officers in designing feasible programmes has positively been identified as one area that can be further explored. This however, will need a chain of reaction from the healthcare levels as defined by MoH, from Level 1 (which are the community units), to Level 2 and 3 in highlighting and bridging the gap in knowledge/awareness creation and feasible interventions on lifestyle diseases management.

The proposed changes are institutional-based and can be cascaded upward from the CHVs to the Sub-County Community Health Strategist, Sub County Health Promotion Officer, the County Health Promotion Officer and finally the relevant officials at the County Health Services sector who have the mandate to forward to the County Assembly as a Health Bill.

6.4 Limitations

6.4.1 Organizational Structure and Hierarchical Challenges

The Co-design approach was not familiar in the decision-making culture of the health system within the Kamukunji Sub-county. However, the unfamiliarity of this approach was soon countered and its relevance accepted in the development of a presumably feasible communication strategy by the stakeholders involved in

this research. The co-design setting was carefully designed to provide a playful and creative environment where the sub-county health officers (decision-makers) and the community health workers (CHVs), guided by the design thinking professionals had equal power and no one was seen as the lead of the other.

6.4.2 Costs, logistics, benefits and value for money

In an environment where resources are often very constrained, participants' perceptions of resources used within the project time (time, travel and allowances) were a key issues. This raises the question of value vs cost; what is the expected output and outcome of such a design intervention? What are the gains for participants' vs quality of designed outputs? Could this intervention be considered as 'best-buys' as proposed by the WHO as an intervention towards curbing the prevalence of NCDs in urban informal settlements in LMICs?

6.5 Recommendations

Use of co-design does not mean the abandonment of often other 'well-laid-out' communication strategies, but is an unexplored avenue towards the improvement of health promotion approaches. It is therefore inevitable that the health communication process involve the end-users and relevant stakeholders in the inception stages of designing a health promotion programme. End-users need to be involved early to get their experiences and requirements so that this can be taken into account at the start of the design process rather than presumptions being made on what is required (also referred to as the Top-down approach). Integrated involvement by all stakeholders will allow end-users open up and share their perspectives in a way they would do in a hierarchical setting.

The proposed health communication strategy framework illustrated in *Figure 6.1* was a culmination of the formative research findings done during this study. Guided by a strategic design roadmap during the study, the researcher was able to draw up a health communication strategy framework adapted from the conceptual

framework identified in Chapter Two of this research. The spheres identified during this research for effective health communications interventions were:

a. Social- Political Environment – Local Government Health Officers
b. Service Delivery System – The Health System Dynamics
c. Individuals and Communities – Front-liners (CHVs)

The critical question out of this research: To achieve the intended outcome, is everyone in the communication chain efficiently empowered do their job properly and effectively? If not, how can this situation be addressed? The answer to this; co-designed health communication strategies that consider all stakeholders involved in the health promotion process. Joint programmes can focus on the key gatekeepers who uphold community norms and engage them because their views carry immense weight in the community

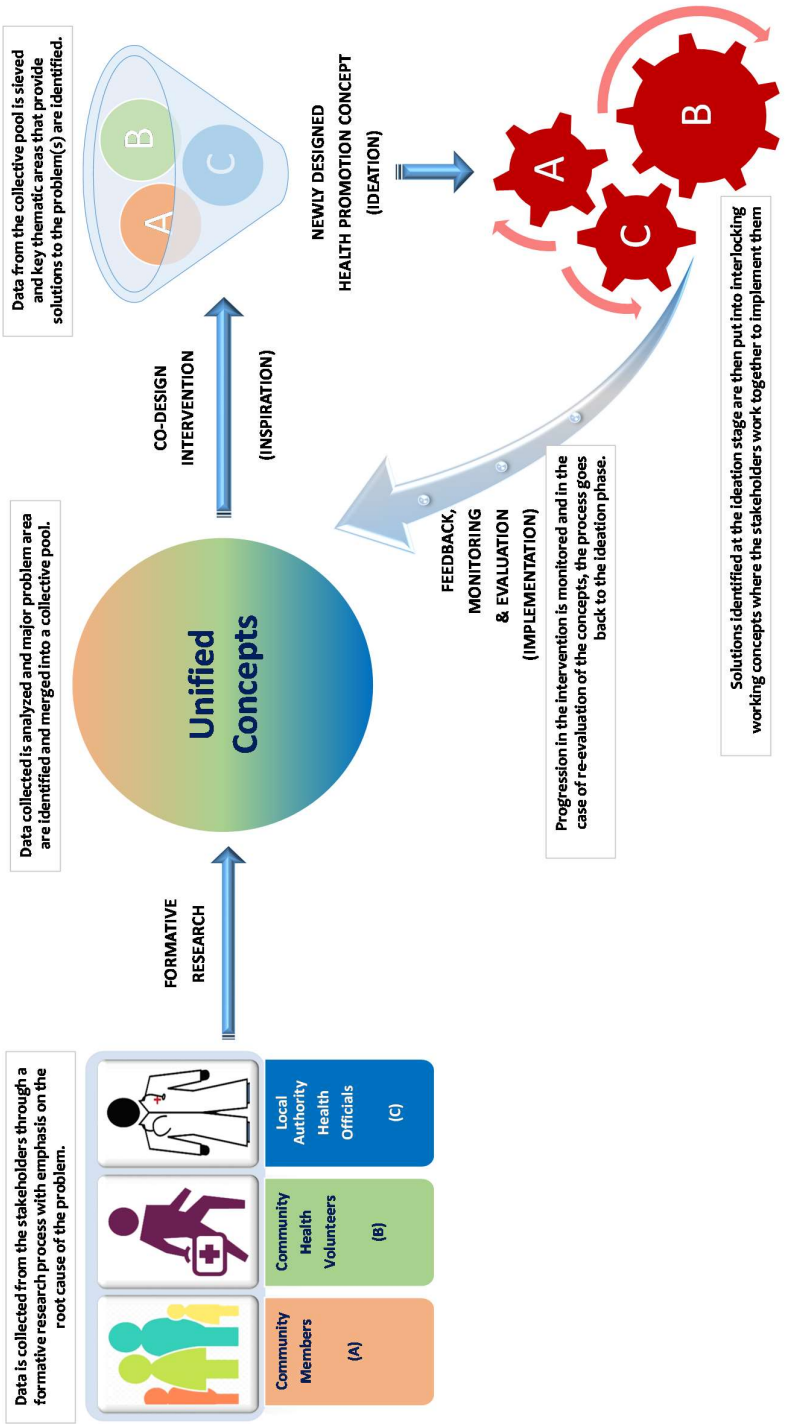

Figure 6.1: Detailed Proposed Health Communication Strategy Framework
Source: Author's Construct (2019)

6.5.1 Proposed Health Communication Strategy Framework Process

1) **Step 1: Identify the Stakeholders – Stakeholder Mapping**

The choice of stakeholders determines how each participant contributes to meeting the project objectives. At this stage the group(s) of stakeholders selected should be a minimum of 3 and a maximum of 5 who will be part of the research process. In the case of this research, 3 groups were identified to proceed to the formative research stage of the study. The 3 groups as indicated in the framework were (a) community members (b) community health volunteers and (c) sub-county health officers.

From research, many health communication programmes emphasize the involvement of communities in designing health programmes. Community participation can range from assisting with the needs assessment of a programme, planning or implementing activities to direct involvement in decisions about all the aspects of program management, resource allocation and evaluation and monitoring.

2) **Step 2: Formative Research**

Data is collected from the stakeholders through a formative research process with emphasis on the root cause of the problem. Formative Research guides the choice of health communication channels presently used, their efficiency and proposes new and innovative channels. Communication channels build on IEC material and emphasize that communication should be strategic and guided by systematic processed and behavioural theory. The experiences, attitudes and concerns of the participants were studied using in-depth interviews and focus groups discussion, as a prelude to the design thinking workshop.

During this research, activities conducted at this stage included:

a. Identifying the NCDs prevalent in the community, and the number of people affected and afflicted by the various diseases
b. Identifying the existing home and community care activities and determine what communication channels were available towards health promotion towards NCDs prevention and management
c. Conducting community-based consultations with the relevant stakeholders on challenges faced toward health awareness creation on NCDs in the community.
d. Summarizing the results in the context of the strategy and program development.

3) Step 3: Concept Mapping – Unified Concepts

Concept mapping helps people think more effectively as a group without losing their individuality, and the goal they set out to achieve. Primarily concept mapping is well-suited for situations where a groups of stakeholders have to work together to formulate a solution to a problem. It helps participants describe their ideas about a topic in a pictorial form. The indicators identified should be valid, reliable, specific and sensitive. Through the recommended steps of concept mapping as discussed in the methodology chapter, the researcher was able to draw up a concept map that summarised the themes and concepts discussed by all the stakeholders in this research as illustrated in *Figure 6.2* below.

Identification of the stakeholders helped bring focus to the problem of the research; by effectively helping define the problem and map out the outcome. The brainstorming sessions done through the in-depth interviews, focus group discussion and community dialogues produced sets of statements that were later clustered into themes. The identified themes were further analysed into constructs by the researcher, to produce a concept map.

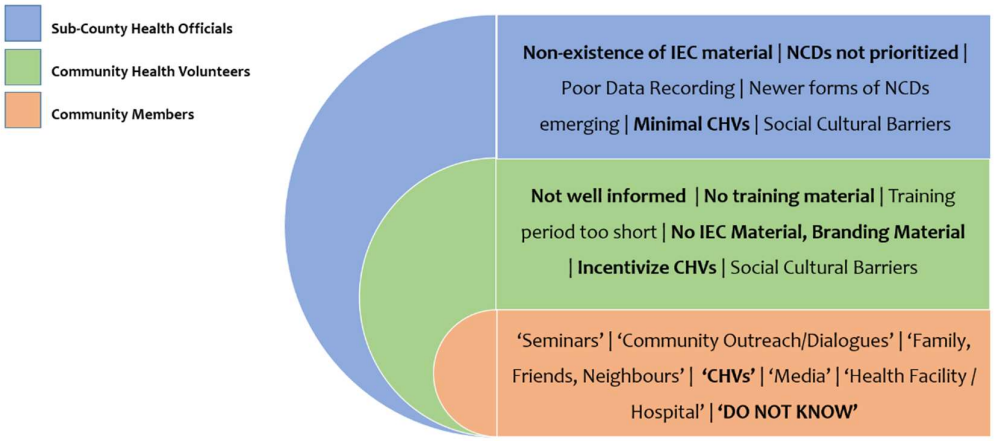

Figure 6.2: A concept map summarizing the key themes identified in this research
Source: Author's construct (2019)

4) Step 4: Co-Design Stage: Design Thinking Workshop

Community engagement and participation entails a rich understanding of cultures, preferences and behaviours to get to the heart of what matters to people. As such, the participants at this stage are those who have worked closely (though at different levels) with the community they live and work in. As displayed in the concept map, the key stakeholders (as indicated in the key), were the Community Members, the Community Health Volunteers and the sub-county health officers.

As highlighted in bold in the diagram *(Figure 6.2),* common key issues were identified by all the participants. These key issues helped in identifying areas of concern in relation to health promotion strategies. This concept map was used during the Design Thinking Workshop to help formulate the health communication strategy framework that was the outcome of this research. In turn this helped inform the researcher in working out a health communication strategy framework that could be used in helping design health promotion programmes towards NCDs

prevention in Kamukunji sub-county. Community participation and sense of ownership of a health promotion programme are vital for accomplishing social change, in this case NCDs prevention and management.

5) Step 5: Developing the Creative Brief for the Health Promotion Concept

Design thinking (DT) approach looks at a participatory '*bottom-up'* process where the end-users and other stakeholders play a role in the shaping of solutions dependent on their needs. DT starts at a small level so that a prototype is developed and tested and a proposed solution to the targeted population is influenced by the message developed. Focus is then laid on the suggested message.

The principles of effective campaign designs are critical in putting together a targeted, well-executed health campaign strategy. In health education and communication, studies have shown that tailored communication material are generally more effective than non-tailored ones in helping individuals change health-related behaviours.

The emerging themes conducted during this research included social cultural issues, language and religious barriers, poor awareness programmes and poor or lack of training material have all contributed to increased prevalence of lifestyle diseases in the Kamukunji Sub County. In translating this into design concepts for an effective health promotion campaign, the profile of the intended audience, the actions expected (objectives) and benefits to the audience is considered and appreciated.

As illustrated in *Figure 6.3* below, the role of a visual designer is enhanced in redesigning the content and material for a health promotion concept, as part of the communication-led strategy. Ideas and concepts receive from the stakeholders of the communication strategy (healthcare officers and the CHVs) is compounded and

refined by the designer to come up with an efficient health promotion concept towards lifestyle diseases awareness, prevention and management.

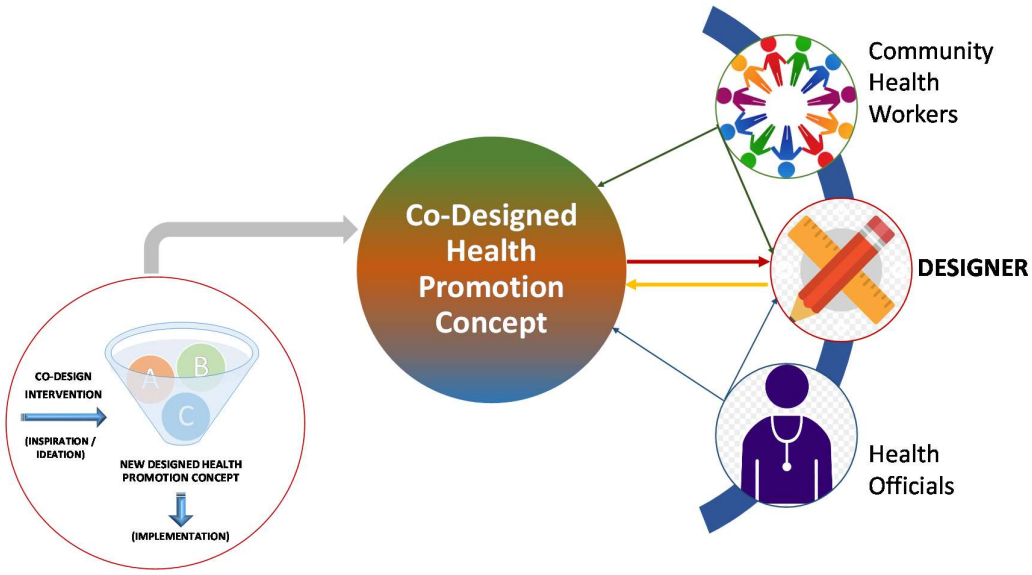

Figure 6.3: An illustration indicating the stage at which a Health Promotion Concept is formulated by the Visual Designer, in the Communication-led Communication Strategy Source: Author's construct (2019)

6) Step 6: Build an Implementation Plan

The implementation stage should cover the stakeholders' roles and responsibilities, activities, timelines, budget and management of the same. At this stage, the program should also plan for monitoring and evaluation of the intervention.

7) Step 7: Monitoring and Evaluation - Iterative Cycle of the Strategy

This proposed health communication strategy operates in a cyclic or iterative cycle. Should a hitch be discovered after monitoring and evaluation, the cycle returns to step 3 where concepts or themes identified are re-evaluated and a new creative brief is established towards designing a substitute health promotion campaign.

In conclusion, a health communication strategy co-created and co-designed by individuals within the target community & related front-liners in the health system can help communities attain healthy lifestyle behaviour and increase uptake of health-seeking services in curbing the incidence of lifestyle diseases

6.6 Areas for Further Research

6.6.1 Testing the feasibility of the proposed framework

The proposed framework has not been tested to prove its viability. However, following the step-by-step research process of this research, and supported by literature, the framework proposes that pursuing this process in design of health promotion programmes might be an unexplored avenue that could be considered in helping reduce the incidence of NCDs in informal settlements within Nairobi. Involvement of key stakeholders in the design process of health programmes, through a bottom-up approach might be the gate pass in producing efficient health communication campaigns in the fight against disease.

6.6.2 Scale-up of the proposed model to other diseases and settings

The proposed framework has not considered other diseases or geographical settings and as such cannot be generalized. However, based on the feasibility of the framework, as indicated above, it can be tried on other diseases and settings to see if the framework works in tackling health challenges towards their prevention and management.

7.0 APPENDIX

7.1 Logical Framework indicating the study work plan

Objective 1: **To investigate how community members in Kamukunji sub-county are encouraged to maintain healthy lifestyles by the healthcare givers.**				
Data Needs	***Data Source***	***Data Collection Tool***	***Analysis Method***	***Expected Output***
Determine the attitudes and knowledge about NCDs and their risk factors among respondents	Population aged (25 – 59 years in an urban informal settlement in Kamukunji sub-county , Nairobi Community Health Volunteers	Community Dialogue Open Ended Questionnaires Audio and Video Recording Note taking	Thematic Analysis Visual Analysis	Knowledge and Perception of population on lifestyle diseases and related risk factors in relation to healthy living
Objective 2: **To establish the knowledge on lifestyle diseases and training methods of community health volunteers within Kamukunji sub-county.**				
Data Needs	***Data Source***	***Data Collection Tool***	***Analysis Method***	***Expected Output***
Existing communication material in the promotion and awareness of Lifestyle Diseases	Health Officers Community Health Volunteers Community Members	In depth Interviews Print Production Audio and Video Recording	Content Analysis Visual Analysis	Review of the design process and understanding of the messages

Objective 3: **To explore existing health promotion and communication channels within Kamukunji sub-county and synthesize with new proposed ones in the prevention and management of lifestyle diseases.**				
Data Needs	***Data Source***	***Data Collection Tool***	***Analysis Method***	***Expected Output***
Existing health promotional material within the study site and any other the population may be exposed to	Health Officers Community Health Volunteers	In -depth Interviews Focus Group Discussion Audio & Video Recording Review of Literature	Content Analysis Visual Analysis	Proficiency; availability of health promotion material Alternative channels for health promotion
Objective 4: **To develop a population-led health communication framework through a human-centered design intervention in Kamukunji sub-county.**				
Data Needs	***Data Source***	***Data Collection Tool***	***Analysis Method***	***Expected Output***
Preference of targeted group in IEC material Design Health Communicati -on Strategy	Health Officers Community Health Volunteers Design Thinking Experts Literature	Co-design Workshop *Review of Literature*	Needs Assessme -nt Content Analysis	Behaviour change and response towards healthy lifestyle choices Improved uptake of health-seeking behaviour

7.2 RESEARCH PERMITS

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/18/21394/21349**

Date: **21st February, 2018**

Betty Karimi Mwiti
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Decreasing the prevalence of non-communicable diseases in informal settlements within Nairobi through a population-led communication strategy,"*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **20th February, 2019.**

You are advised to report to **the Principal Secretary, Ministry of Health, the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GP Kalerwa
GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

MINISTRY OF HEALTH
RECEIVED
05 MAR 2018
MAIL OFFICE
P.O. Box 30016, NAIROBI

Copy to:

The Principal Secretary
Ministry of Health.

COUNTY COMMISSIONER
NAIROBI COUNTY
P. O. Box 30124-00100, NBI
TEL: 341666

The County Commissioner
Nairobi County.

THIS IS TO CERTIFY THAT:
MS. BETTY KARIMI MWITI
of UNIVERSITY OF NAIROBI, 53329-200 Nairobi,has been permitted to conduct research in *Nairobi County*

on the topic: *DECREASING THE PREVALENCE OF NON-COMMUNICABLE DISEASES IN INFORMAL SETTLEMENTS WITHIN NAIROBI THROUGH A POPULATION-LED COMMUNICATION STRATEGY*

for the period ending:
20th February,2019

.....
Applicant's Signature

Permit No : NACOSTI/P/18/21394/21349
Date Of Issue : 21st February,2018
Fee Recieved :Ksh 2000

.....
Director General
National Commission for Science, Technology & Innovation

CONDITIONS

1. The License is valid for the proposed research, research site specified period.
2. Both the Licence and any rights thereunder are non-transferable.
3. Upon request of the Commission, the Licensee shall submit a progress report.
4. The Licensee shall report to the County Director of Education and County Governor in the area of research before commencement of the research.
5. Excavation, filming and collection of specimens are subject to further permissions from relevant Government agencies.
6. This Licence does not give authority to transfer research materials.
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REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No.A 17600

CONDITIONS: see back page

Republic of Kenya

MINISTY OF EDUCATION

STATE DEPARTMENT OF BASIC EDUCATION

Telegrams: "SCHOOLING", Nairobi
Telephone; Nairobi 020 2453699
Email: rcenairobi@gmail.com
cdenairobi@gmail.com

When replying please quote

REGIONAL COORDINATOR OF EDUCATION
NAIROBI REGION
NYAYO HOUSE
P.O. Box 74629 – 00200
NAIROBI

Ref: **RCE/NRB/1/14/ (33)**

DATE: **5th March, 2018**

BETTY KARIMI MWITI
UNIVERSITY OF NAIROBI
P.O. Box 30197-00100-
NAIROBI

RE: RESEARCH AUTHORIZATION

We are in receipt of a letter from the National Commission for Science, Technology and Innovation regarding research authorization on **"Decreasing the prevalence of non-communicable diseases in informal settlements within Nairobi through a population-led communication strategy".**

This office has no objection and authority is hereby granted for a period ending **20th February, 2019** as indicated in the request letter.

Kindly inform the Sub County Director of Education of the Sub County you intend to visit.

COUNTY DIRECTOR OF EDUCATION NAIROBI 05 MAR 2018 MINISTRY OF EDUCATION P.O. BOX 74629, NAIROBI

JAMES KIMOTHO
FOR: REGIONAL COORDINATOR OF EDUCATION
NAIROBI

Cc:

Director General/CEO
National Commission for Science, Technology and Innovation
NAIROBI

7.3. SAMPLE QUESTIONNAIRES

7.3.1 Questionnaire to Community Members

HEALTHY LIFESTYLE QUESTIONNAIRE – GENERAL POPULATION IN KAMUKUNJI

DETERMINING ATTITUDES ABOUT THE CHOICE TO LIVE A HEALTHY LIFESTYLE

[SELEECTION CRITERIA QUESTION]

[prompt]

Have you ever been screened or tested for a lifestyle disease e.g. Diabetes, Hypertension, Cancer or Heart Diseases?

- Yes

[END SURVEY]
We appreciate your response. We are seeking to understand the opinions of people who believe themselves to be living healthy lifestyles and are currently not receiving treatment for any Non Communicable Disease.

- No

[PROCEED WITH SURVEY]
Thank you for agreeing to take this survey. The survey is being done by a PhD student at the University of Nairobi purely for academic purposes. The research aims to establish as to whether the population within your area are well informed about lifestyle diseases and how to prevent oneself from acquiring them, and in turn living a healthy lifestyle free of Non Communicable Diseases.

All of the answers you provide in this survey will be kept confidential. No identifying information will be provided. The survey data will be reported in a summary fashion only and will not identify any individual person.

This survey will take about 20 minutes to complete.

1. What would you define as being healthy in your physical state?

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2. What measures have you taken to retain your ‘good’ health?

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3. Have you ever heard of the term “’Lifestyle Disease’?

- Yes
- No

4. What is your understanding of a lifestyle disease, if you have ever had of the term and what do you think leads to such kind of diseases?

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5. What are some of the health information material have you been exposed to, that promote a healthy lifestyle free from disease? (Whether through digital media or analogue)

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6. In which ways do you feel the administration/leaders around your locality can help in maintaining a clean and healthy lifestyle within the society in which you live in?

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7. Do you agree or disagree with the following statement: I am satisfied with the health information that I receive through the local health promotion office/clinics.

- Strongly agree
- Agree
- Disagree
- Strongly Disagree

7.3.2 Questionnaire to Community Health Volunteers

HEALTH PROMOTION QUESTIONNAIRE – COMMUNITY HEALTH VOLUNTEERS

REVIEW HEALTH PPROMOTION AND HEALTH COMMUNICATION MATERIAL FOR NON COMMUNICABLE DISEASES

Thank you for agreeing to take this survey. The survey is being done by a PhD student at the University of Nairobi purely for academic purposes. The research aims to establish as to whether the population within your area are well informed about lifestyle diseases and how to prevent oneself from acquiring them, and in turn living a healthy lifestyle free of Non Communicable Diseases. The research also seeks to establish effective ways of producing Health Promotion material and the most effective channels of communicating these messages.

All of the answers you provide in this survey will be kept confidential. No identifying information will be provided. The survey data will be reported in a summary fashion only and will not identify any individual person.

This survey will take about 20 minutes to complete.

1. How would you define the term 'health'?

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2. How would you describe the general health of the community in which you serve?

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3. What measures have you as a health expert made towards ***keeping this community healthy*** and what has guided these decisions?

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4. What is the prevalence rate of lifestyle diseases in the area you serve? What would you say is the cause of this?

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5. What are the ***health information sources/media*** you use in health promotion towards healthy living in your community?

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6. How is the ***health promotion material*** amongst the community distributed and what would you say is the uptake of this information amongst the community members?

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7.4. Report on Health Sensitization Community Dialogue at Kamukunji - 13th June 2018

The session was facilitated by the Community Health Administrator (CHA) - Titus. These sessions are held weekly or on demand in the case of an epidemic to sensitize the community about the prevalent diseases at that case in time.

For the purpose of this dialogue, the research team purposefully identified participants of the age range of between 25 and 50 years. The session began by the participants being given a recap on what the public workers had taught them in previous community dialogues. The facilitator went ahead to acknowledge the prevalence of non-communicable diseases in the area and how even the youth are nowadays affected by these diseases that were once associated with those of older ages. These diseases he added are now affecting the youth because of change in lifestyle such as practice of poor eating habits and other unhealthy practices – like alcohol and tobacco use.

To roughly gauge the participants' knowledge of NCDs, the facilitator asked them to name some of these diseases that they knew about. The community members named diseases such as cancer, hypertension, diabetes, asthma and ulcers among others. With the facilitation from another health officer (head nurse at the health facility) the next phase of the session began.

In the second phase, the head nurse dwelt on the most common NCDs one at a time. The discussion began by the facilitator acknowledging that most of his audiences were familiar from the previous sessions on health sensitization. He encouraged participants not to shy off in asking or answering questions saying that all answers are right and acceptable.

The discussion on the types of diseases began by the group appreciating the fact that most people attribute sudden deaths and diseases that they do not understand to witchcraft and other supernatural forces and this hinders the kind of attention required that is helpful at early stages of most NCDS. For each disease, symptoms were outlined by the facilitator. Though prior to this, the facilitator would indulge the group prompting them to give their own ideas on what they thought would be the symptoms for the various diseases. The next step would be to advise the group on the management of those diseases. This was done just like in the first step by prompting ideas from the participants then laying out the facts. This entailed giving them detailed advice on what to do when one suffers from the diseases. He mainly suggested the right diets and hygienic measures that one needed to pay attention to certain conditions.

Below are the diseases discussed during the session?

1. Hypertension (HT)

This is a condition that occurs when blood is not sufficiently pumped to the heart. Some of the causes of HT were outlined as bad eating habits e.g. oily foods and lack of exercise. Some of the symptoms discussed included headache at the back of the head, elevated heart rate and blurred vision when waking up from sleep or fast rising after sitting for a long period of time.

The facilitator then advised the group that for this condition, regular checkups on the blood pressure levels is necessary and should be done more than once to conclusively assert the absence or presence of the condition. He resonated this saying that the normal blood pressure should be at 120/80. In addition the facilitator warned the group that hypertension is terminal and should be prevented. He also said that medication administered for this condition differ for every patient depending on various factors that define the condition. He also urged those suffering from the condition to avoid red meats, oily foods and excess salts.

2. Cancer

Some of the points that emerged in this discussion were that cancer can affect any part of the body. As cancer spreads, it affects the blood cells causing them to change shape and become abnormal. It was noted that 95% of cancer is caused by environmental factors such as seasoned foods, skin make-up, perfumes and generally unwanted chemicals in the body. The facilitator then engaged the participants in listing various cancer types including: cervical, breast, kidney, skin, bones and blood cancer, which were identified as the most common types.

The discussion on the types of cancers began at Breast cancer. This was decided on the basis that majority of the participants were women who have the most prevalence when it comes to breast cancer. Some of the points highlighted were the fact that breast cancer occurs in four major stages and only at stage one was there a likelihood of cure. The facilitator then went further to describe how one should perform self-examination for breast cancer. The facilitator advised that the women should engage their partner in the examination of this type of cancer.

The next type discussed was cervical cancer stating the symptoms as vaginal bleeding especially if one is not on any contraceptive, unusual discharge, feeling of itchiness in the cervix and not in the vagina. The facilitator then reiterated that the first stage of cervical cancer is easily curable.

The discussion then moved to blood cancer which was said to be genetic. Some of the symptoms that were highlighted were: low blood levels, headache, bleeding without clotting and dizziness. He also told the group that referrals for blood cancer were done at Kenyatta National Hospital. The next type of cancer discussed was skin cancer stating that it affects the skin by hindering its recreation when it sheds off as it regularly does. Individuals suffering from this cancer end up looking like their skin is burnt and have reddened lips. However, he was particular in adding that other conditions such as vitiligo may also exhibit the same conditions and should not be mistaken for skin cancer. 3. Diabetes Diabetes was then discussed as the next NCD defining it as the failure of the body to either synthesize its sugars or regulate its sugars properly. This gives rise to the two types 1 and 2. The third type mentioned was the gestational diabetes acquired during pregnancy and may heal after delivery. Certain symptoms that were aligned to this illness were: frequent urination, sweat, frequent thirst, dry skin, dizziness and frequent headaches. The condition was said to be mostly genetic but could also be acquired. He concluded by saying that diabetes had treatment only the treatment would be for a life time. The discussion on diabetes brought to an end the session. Thereafter those with questions were allowed to ask. The session ended with the participants being issued bread and milk as a gesture of appreciation and goodwill.

7.5 Findings from Community Health Volunteers In-depth Interviews

Sn.	Define the term 'healthy lifestyle'	General health of the Community	How do you encourage the Community to keep healthy	Prevalence rate of lifestyle diseases	Sources of health information	Any health promotion material	Challenges faced as a CHV
CHV 1	It is a lifestyle that one is able to live without having any health problem. That is either not feeling unwell and consuming what is good for the body	Not good. This is because of the kind of life we live that is the environment itself and all what we are taking/eating	By creating health talks to community because many people do go for treatment when at their worst condition	It is moderate but mostly those I have interacted with are the ones of an older age	Door to Door Dialogues Medical Camps	No material	Most ailments are discovered late due to lack of awareness and thus costly as it is very challenging managing these diseases
CHV 2	Eating in accordance to a balanced diet (Proteins, Carbohydrates and Vitamins)	Generally healthy. With the sensitization that is normally done by the CHVs. It has helped reduce or curb the avoidable diseases	With the increase of some lifestyle diseases we try and create awareness on such issues. We have been having nutrition classes for the	In every 10 people there is probably one who has the lifestyle disease. This could be due to the type of food they eat	Social media Nyumba kumi initiative Community dialogue/forum	For the young people use whatsapp groups, Facebook groups. For the elderly the area chief office or the nyumba kumi leaders, CHV and CHC	Religion Barrier Language Barrier Age

			under 5yrs babies				
CHV 3	Eating healthy food and aware of eating and avoiding the food stuff that are not healthy	Most of the people are aware of healthy living. The aged are a few with illnesses like hypertension	Visiting them frequently and referring them for proper medical care to the health clinic; because they don't like going to the hospitals	Minimal because we try to make everyone aware	Word of mouth In religious setting like the church and mosque	None	Some say they cannot spare the time because they are busy
CHV 4	This is the lifestyle whereby a person is healthy. He or she maintains nutrition. Eats a balanced diet and does exercise and maintains hygiene	Needs more empowerment on this health matters. We try to our level best to give health talk during household visits. Some take it positively	Through health talks and counselling Referring whenever I identify out breaks	Growing fast and is caused by poverty which lead to poor nutrition	Outreaches Forums Door to Door Community Dialogues	Through CHvs, CHCs, Social media, Forums and Door to Door	Bad Weather Ignorance from some of the community members Transport especially when you identify a bed

			Reporting to the necessary dockets e.g. chief, CHA, Health facilities				ridden patient who needs urgent assistance from hospital facility
CHV 5	Being of good health by living in an upright way health wise	It is average. Good and bad in equal measure. The members seek help when they are unwell. Checkup is not often	Household visits and health talks Send members for referrals	Not easy to know as most often than not illness is discovered too late into the disease. Elder people are affected more	Clinics, Dialogues and Door to Door	Only when provided by funders or people doing research. They are a distributed to the community but are not useful	People brush you off saying they only work with doctors' advice Health facilities are ill-equipped even when referred and sometimes misdiagnosis happens People rely a lot on community outreach as their check-up day, and only based on availability

CHV 6	Being physically okay with no weakness	It is not too bad but it could get better	During community talks we tell them of the benefits of going to seek medical assistance at the health facility	It is on the increase mainly because we have not concentrated much on it but more on mother and child care.	Household visits Medical Camps	From the health facility trainers we take notes as they give the talks	Lack of incentive and sometimes we have to pay for the patient when we take them to hospital because the local facility cannot treat the patient
CHV 7	Eating and Sleeping well and having no illness	Some are good and others are bad. Depends on how the community is informed and ready to seek assistance.	We visit then frequently in their houses and advise them when ill as well as referring them to the health facilities	Most times we do not know what is ailing someone, sometimes we think it is just a normal headache until the person is critically ill and we then get to know that it is hypertension. We have had very many cases of this lately.	Community Dialogues Door to Door Visits	No. Just when we have funders doing a medical camp, but otherwise no permanent material	Poor Infrastructure and ill equipped health facility Few CHVs having to cover a large number of households Gender bias – some households will not let you in if you are of the opposite sex

7.6 Report on House-to-House Visits – 14th June 2018

The survey began at about 8.30 in the morning. To independently and effectively investigate the work of the community health volunteers (CHVs), the research team visited a maximum of five households with each CHV to evaluate them individually. With each CHV, the researcher took a maximum of 2 hours to interrogate the members of the households. During this period the researcher assessed the health information dissemination offered each of the CHVs and a few common things were noted;

1. The CHVs

The health volunteers are quite knowledgeable about the community areas that they work and are quite popular to the residents too. The residents easily recognize them and pay attention to what they (CHVs) have to say. CHVs are highly regarded with most people putting high value into their services. These health workers are the communities immediate medical consultants and handle a lot of the communities' medical emergencies. The community comprises mostly of low income earners and cannot always afford medical/hospital expenses. When handling major conditions the CHVs usually refer the patients to the local health facility where they can access medical care. The challenge however is, the local health facility is ill-equipped and as such they are forced to seek treatment at private hospitals which the community members are unable to afford.

The CHVs are quite passionate about their work though their inspirations are drawn differently. Some were inspired by their general knowledge on health care, others feel it's a calling, while other by their own situations and experiences such as abuse related factors and teenage pregnancy. For example one of the CHVs had an unplanned pregnancy in her teenage and suffered the plight of being a young single mother. It is through this experience that she got inspired to volunteer at the health facility at the post-natal section. This way she has had a chance to meet other young mothers in desperate situations (such as attempted suicides and abortions) and thus is able to encourage them giving them hope for a better tomorrow.

All the 7 CHVs who participated in the survey are high school graduates – who later underwent college trainings from various institutions in various professions but have still opted to become community health workers. Their work is mainly voluntary and they only get to earn small stipends from researchers by assisting them to access the community and perhaps occasionally carry out a training on a certain epidemic or awareness programmes on various vaccines and ailments.

The CHVs do not feel motivated and most of them feel that their services would be so much better and more people would volunteer if there was some form of financial compensation to facilitate their services.

2. The households

Kamukunji is an informal settlement and just like any other informal settlement the living conditions in the area are rather poor characterized by eminent housing congestion, open gulleys and in some areas open drainages. Most of the residents seemed to recognize and appreciate the CHVs and the services they offer to the community.

These households seemed to be informed about the prevalent diseases in the region both communicable and non-communicable. One thing that stood out though was that those who knew about life style diseases better were the ones who were suffering from them or those who had handled patients or had relatives ailing from those diseases. Furthermore, most credit their knowledge on various diseases and ailments to the CHVs. Some of them had knowledge of diseases from health facilities too but only after they had been referred there after seeking treatment for some ailment.

Though the community leaders have a role to play in sensitizing the community on health matters, the majority of the residents feel that those in authority, the administrators are not doing enough to help the community as regards health and sanitation matters.

Among the things the community expects of their leaders include; holding health dialogues with the community in *barazas*. They also expect that leaders should be at the fore front in channeling for better sanitization and environmental cleanup.

7.7 Report on Focus Group Discussion with CHVs – 20th June 2018

This was a focus group discussion attending by only the community health workers. The conversation was set to pace by the following questions;

1. What are your views on the health seeking services in Kamukunji in general?

The group was of the opinion that most residents do not go for regular checkups and wait till they feel unwell to go hospital. Otherwise most people prefer over the counter drugs which mainly suppress symptoms hiding the main diseases and keeping them from being exposed hence treated. These they say only help to worsen the situation. This has resulted to most life style diseases being diagnosed at late stages when treatment and management are harder. Others mostly men prefer to take painkillers until they can no longer stand the pain and other symptoms. This is based on the stereotype that the pride of a man is based on how much pain he can endure before visiting the hospital.

They acknowledged though that most people know about their services and regularly call on them. This is however preceded by the fact that on standard they are supposed to cover a maximum f 50 households per month. However in certain cases they end up covering up to 0200 households due to the fact that the demand from the community exceeds the number of health volunteers in the community. They mentioned extreme cases where residents even wake them up in the middle of the night with emergencies which they have to attend to. These night calls expose them to insecurities as even their access to those households are not facilitated. They however say that the cases of insecurities have not been extreme as people know and respect them. Another challenge that comes with most emergency calls is that the burden of getting these patients to hospital and getting them admitted is sometimes left to them.

There were appeals that more trainings and incentives should be issued to get more people to volunteer to ease their current burden of service. They also appealed for in depth trainings on lifestyle diseases such as cancer so that they are even better informed to sensitize the community and create more awareness on these illnesses. They also suggested that cancer patients should be better informed on how to prevent or manage their conditions and these can only be effective if they are also well trained on them.

Another issue that was strongly resonated was financial poverty. People in Kamukunji are mostly low income earners and cannot afford basic medical services. Though many people have acknowledged the CHVs and are continuously reaching out to them, there is only so much that they can do to help with their limited skills. The CHV work also does not appeal to most men who are the main providers for their families. This is because there is no financial compensation for the CHVs whose reach is also so wide and highly demanded. The men feel that they are better off hustling out there for their families than being community health volunteers. This goes along to support the fact that passion is the main drive for most of these CHVs.

Even though they deal with issues on NCDS they majorly focus on communicable diseases, expectant mothers and handle immunizations within the area. Despite all their trainings and experiences they still feel that their knowledge is still quite limited given the kind of medical tasks that they handle. The group unanimously felt that over time they have been taught sufficiently on how to handle diseases such as HIV and tuberculosis. This knowledge has been very helpful in sensitizing the population about this diseases and educating those with this condition on how to manage them. This had such positive

impact on the community and they felt that lifestyle diseases should also be handled with such vigor as they are just as terminal as HIV and TB.

Another issue of concern that arose was on the quality of treatment offered at the clinics. They claimed that most diagnosis was shallow leaving people being treated for circumstantial diseases such as malaria that can easily be diagnosed and treated. The group was of the opinion that this issues can be better curbed if they were to be empowered more to allow them handle certain cases of ailing. Armoured with this kind of empowerment they would be so effective that people would not infer to supernatural courses for diseases that they did not understand as has been the case so far.

When asked whether they thought identifiers would be effective in communicating their presence and services to the community they unanimously agreed. They said something that would act to set them apart from the ordinary people would be very effective. Lack of identification has been a challenge even when they escort patients to public hospitals and they are refused from leaving the patient despite the fact that they are not related to them. Most administrations assume that they are relatives of the patients trying to abandon them in hospital. Because they have no identifiers, they always have a hard time proving that they are simply community health workers.

The CHVs reported that usually they are trained specifically on certain diseases and conditions.

This leaves some of them with prenatal skills, others with knowledge on CDS and others on NCDS. This method of training did not seem to appeal to them and they suggested that the trainings should be done on a compounded general basis so that an individual could handle different cases with the necessary competence. In support of this they exemplified this stating that, the community members that consult their services and confide so much in them but they shy aware when one cannot handle a certain situation that they are not quite knowledgeable about and has to refer the patient to another CHV. Usually some would even opt out their services and suffer because of the fear of disclosing their health status to a separate CHV.

Another major challenge that the group mentioned is the post psychological trauma they have to deal with after handling extreme cases such as deaths. The CHVs do not undergo any psychological training on how to get over certain situations neither are they offered counselling services after such trauma. They also reported that the demand of their services is so high that they rarely get a chance to take a break or a vacation. These situations sometimes get so intense that they focus so much on the community needs that they forget their own personal needs. Some end up neglecting their businesses and only sources of livelihood given that the CHV work is voluntary.

The CHVs also reported that mental health issues were getting rampant in the area. This they attributed to failure in relationships and marriages and factors that surround these social institutions. Other cases they attributed to drug and substance abuse. There are also no nearby facilities in the area where these mental issues can be addressed.

2. How can the community be encouraged to go for checkups?

To address this issue a few suggestions were made

- Better communication about various diseases to avoid misconceptions. This was exemplified by the campaigns on circumcision that saw most men even old men going for circumcision after they understood its importance. This went to show that communication is key in preventing misconception such associating breast cancer to witchcraft and helping to understand various diseases.
- There is the gender perspective that should be considered in trying to address this issue they said stating that men feel freer expressing their illness to fellow men than to women especially with cases of sexually transmitted diseases.

3. CHV reports

The group reported that their visits are accurately reported on standardized forms. Initially the reports were done on phones but this has since changed with time and they now manually record on a form. They then return these reports at the end of every month.

7.8 Findings from Community House-to-House Visits (1-25) and Community Dialogue (26-54) Open-ended Questionnaires

Sn. No.	Age	Definition of health (Physical and Mental)	Measures taken to retain good health	Heard of Lifestyle Disease	Definition of Lifestyle Disease	Availability of Health Promotion Material	Ways administration can promote good health	Level of satisfaction of health education and promotion
1	35	Malisho Bora, Maisha Bora	Eating Well Exercising	Yes	AIDS, Cancer, Diabetes caused by poor nutrition	Seminars at clinics Seminars at Mosques	Educate at Barazas Seminars at social places	Strongly Agree – Very educative and helpful
2	58	Being fine	Cleanliness in Good eating habits	Yes	Ulcers, Cancer, AIDS caused by bad sexual indulgence, bad eating habits, stress	Media Friends and Neighbours	Call for meetings that offer health education talks Mingle with each other	Strongly Agree – The visits are very educative and I am quite happy with the services because they refer people to hospitals when they see the need to.
3	56	Feeling fine	Exercising	Yes	Diabetes, Asthma caused by bad food	Seminars	Chiefs are too corrupt to do anything. On the	Strongly Agree – They give good guidance

			Balanced Diet Avoiding Stress			Churches	other hand CHVs can be empowered because they do the most work	on healthy living
4	25	Usafi, kula vizuri	Keeping a clean house Eating well	Yes	Cholera, colds, caused by unhygienic living conditions and cold environment	Clinics Media Family and Friends	Hold training session on healthy living and also demonstrations	Strongly Agree – they help to improve our health situations and we follow their instructions
5	43	Body health, uzima wa mwili	Exercising Eating a balanced diet	Yes	Blood Pressure, Diabetes caused by lack of exercise, stress and unhealthy nutrition	Hospital CHVs	Better sanitation and toiletry Better sewages to be built Educating people on healthy living	Strongly Agree – People have no access to medical assistance and they are able to reach them. Others do no want to go even when sick so the CHVs are able to reach out to them

							and stress free lifestyle	
6	28	Cooking and eating good food Boiling water Visiting the clinic when necessary	Visiting the clinics for checkup Making sure the children are immunized	Yes	Such as cancer and pressure caused by bad eating habits, stress and not taking fluids	CHVs Facility Clinics	Meetings or teaching sessions held to sensitize the community	Strongly Agree – The teachings are good especially information on child health and nutrition
7	27	Clinic Visits Eating nutritious foods	Clean food and water	Yes	Such as Pressure, Cancer caused by frequent clinic checkups	CHVs teachings Clinic Visits	Addition of more reliable treatment of these diseases More screening and testing access	Strongly Agree – Give me knowledge that I would otherwise not have
8	43 HBP	Eating food that is helpful to your body	Eating a balanced diet Exercising	Yes	Such as Diabetes diseases, you get them from bad foods. Caused by	Teaching sessions by CHVs Medicine	Hold barazas and dialogues to sensitize community on good health	Strongly Agree – If it wasn't for the CHV I would be dead. Through training I got to

			Drinking 8 glasses of water a day Sleeping 8 hours a day		eating too much fat. One should eat fruit with their peels		One on one with the CHVs (door to door campaigns)	know my condition.
9	47	Eating good food, Exercising, Going for Check-up	Checkups, following CHV sessions. I do breast examinations every morning for breast cancer, maintain hygiene	Yes	Such as Diabetes, Pressure, caused by bad eating habits, stress and not exercising	CHV visits Announcement of free medical checkups	Educate people on good health	Strongly Agree – they are very helpful and I am happy
10	27	Clean living and good food	Making clean food Being hygienic Maintain clinical checkups	Yes	Diseases like diarrhoea caused by dirty water or unhygienic living e.g. not washing hands before food	CHVs Clinics	Addition of more CHVs to cover more households	Agree – They are okay but should put in more effort

11	36	Eating a balanced diet and living a stress free life	Eating well Avoiding stress	Yes	Such as cancer, Diabetes, Pressure caused by poor nutrition and is genetically acquired	I read and learn from CHVs From hospitals about breast cancers and clinical checks	Educate the community Bring medical officers for much thorough examinations	Agree – We appreciate the effort but the CHVs should give us more time to even ask questions and they should also be given incentives to motivate them48
12	48	Lishe Bora	I hustle to get money for food	Yes	Such as Asthma, Diabetes, HBP caused by how someone lives, work conditions, those you live with may also stress you	From CHVs especially From hospitals	Calling meetings through chiefs, government employing and empowering more people	Strongly Agree – They help alot of poor people access medical treatment
13	20	Not ailing from any disease	Eating a balanced diet	Yes	Such as obesity, kwashiorkor, caused by overeating, not taking a balanced diet	General Knowledge Through media	Should assign people to clean the community	Strongly Agree – They help those who are sick and need urgent medical attention

			Maintaining hygiene		and unhygienic lifestyle	Through CHVs	Disinfect sewages and rivers Provide free food to the sick to help maintain health	They provide medication like de-wormers
14	28	Taking good care of your child Boiling drinking water Not sharing needles Maintaining personal hygiene	Maintaining hygiene Cooking clean food Drinking clean water	Yes	Such as pressure, diabetes caused by eating oily food, too much sugar and is genetically acquired	From CHVs From hospitals	Hold door to door sensitization Hold group teaching sessions	Agree – I have learnt alot and they should continue to teach the community and for this we would require more CHVs
15	37	Eating well	I eat well	Yes	Such as HIV, Cancer, Asthma caused by sharing personal items,	From CHVs From media	Bring in projects	Strongly Agree – it is very helpful

			Go for regular checkups Seek nutritional advice from CHVs Treat my water for drinking		a lot of chemicals in food and oily foods		Bring in help and education Hold barazas	
16	59	Being fine. Being strong enough to talk walk and work	Eating well Loving myself and others	Yes	Such as diabetes caused by eating sugars, maize flour, bread	Has experienced it through a close relative From hospitals From village memos (Nyamrerwa)	By providing for the less fortunate e.g. food and clothing Educating people	Strongly Agree – They give good guidance and direction on how to maintain good health
17	48	Making sure your life choices do not affect you negatively and give you peace	Eating the right foods Exercising	Yes	Such as HBP, Thrombosis caused by being inactive, bad foods, lack of	Seeing affected people From media	Appoint people to clean the village	Strongly Agree – They caution me when I am doing something that

			Not taking too many medicines even for simple cases like colds and simple headaches		enough blood in the body	From CHVs	Improve sanitation e.g. put up toilets	is not advisable health wise
18	30	Stable minded and strong	Eating well Exercising	Yes	Such as cancer, ulcers caused by eating bad food, drugs and lack of exercise	From friends and family who are affected Education	Improve advertisements on health Hold dialogues with the community Community visits	Strongly Agree – They advice on good health and caution on unhealthy living
19	39 Diabetic	Lishe bora Kunywa maji kwa wingi	Following instructions from CHVs on good nutrition	Yes	Diseases that are not contagious but chronic such as diabetes, arthritis and pressure caused	Social workers bringing information	Add more CHVs and make better community awareness activities	Strongly Agree – They empowered me with knowledge and made me realise the kind

		Exercise and medical checks	Drinking lots of water clean water to be specific		by poor eating habits and lack of exercise	From health centres	Clean up programmes within the settlements	of disease I was ailing from
20	50 Arthritis	Lisha bora Exercising Stress Free	Nazingatia kula poa na kwenda checkup	Yes	Can be inherited Eating habits and no exercise Lack of knowledge and poverty leads to these diseases	Visiting hospitals Counselling and teaching at hospitals Through community empowerment	Bringing social workers to add onto knowledge Build more health centres to visit and be educated	Agree – They are quite a few and cannot sufficiently cover the entire region They commend the few and appreciate their aggressiveness
21	60-65 Diabetic	Eating foods with no chemicals like pesticides and with little oil Exercising	The government doesn't care alot for its citizens, everything has chemicals and many things are not original especially the foods. I cannot live	Yes	Caused by humans to themselves. Caused by government by importing chemicals and focusing on	Eating a balanced diet gotten from the clinics CHVs	They should stop preaching and start practising There should be genuine examination of imported foods	Agree – They do what that are taught to do whether it is precise information or not

		Reducing levels of pollution from the environment	a healthy life with these chemicals		money and not health Bad eating habits Genetically acquired	Organisations like St. John's who hold seminars	to avoid chemicals Should introduce free medical access for those with lifestyle disease just like for those with TB and AIDS	
22	35-40 Mental issues	Free from disease and stress	Avoiding stress Eating healthy foods	Yes	Diseases caused by the way of living with effects from the environment. Caused by things like drugs e.g. narcotics and miraa	Materials from mental hospitals on things that cause mental disease like bi-polar Info from herbal doctors From doctors on supplements	Provide free medication More doctors Improve emergency contacts for medical services or individuals to access	Agree – More education and sensitization should be provided on health issues There is no rehabilitation facility in the area to inform people on the bad effects of drugs on health

23	50	Eating a balanced diet	Practising good eating habits but hindered by high living costs	Yes	Diseases acquired through poor eating habits and are caused by not maintaining the required nutritional habits due to high cost of living	Advice from CHVs on the diseases	Holding campaigns on health lifestyle Maintaining a clean environmental atmosphere	Agree – They try their best but there are referral challenges that hinder this
24	26	Being fine kikazi yuko sawa, kiafya ako sawa	Exercising Eating fruits Regular Check ups	Yes	TB HIV Mostly caused by drug use and smoking	From friends and Family	Open schools that teach about health matters Bring teachers with experience on health issues	Agree. Because it is helpful
25	28	Taking care of one's health, making sure you go for check ups	Maintaining Hygiene Eating a balanced diet	Yes	Diarrhoea Colds	From Hospital Peer Educators	Educate people of good health Providing medical assistance and	Strongly Agree. Give free information on

			Avoiding Stress		Malaria Caused by one's way of living – what they do and not do		resources like mosquito nets	many health issues. Inform people when there are outbreaks.
26	*(within range)*	Eating healthy and using a comfortable life	Going for tests in the hospital	Yes	Diseases caused by way of life	Health workers	Door to Door	Agree
27	"	Eating healthy and being comfortable	Taking healthy foods	Yes	Because of what we are taking on a daily basis	None	Visiting door to door	Strongly Agree
28	"	Eating healthy and living comfortably	Eating healthy foods	Yes	What we are taking on a daily basis	None	Visiting Door to Door	Strongly Agree
29	"	Eating healthy and living comfortably	Eating healthy foods	Yes	What we are taking on a daily basis	None	Visiting Door to Door	Strongly Agree
30	"	Being tested or screened for a healthy lifestyle	Eating a healthy balanced diet and being tested	Yes	It is a communicable disease which cannot be transferred from one	Through media and analogue health communication	By bringing outreach health facilities e.g. mobile clinics	Agree

					person to another. Can be led by too much stress or not being screened. Not eating healthy.			
31	"	Eating food without a lot of oil and doing exercises everyday	Doing exercise everyday Eating fruits and greens Reduction of oil	Yes	Hypertension is a bad disease which is led by thinking so much e.g. stressed Cancer is a killing disease	Through health communication	By going door to door so that they can help everyone in the community	Agree. Because he has taught us what we are supposed to know
32	"	It is being free from diseases or illnesses	Visiting a doctor or a health facility	Yes	These are diseases which occur often and are not curable	Going for check ups Not eating or eliminating	Using clean latrines and toilets	Agree. It is true that the diseases are non-curable

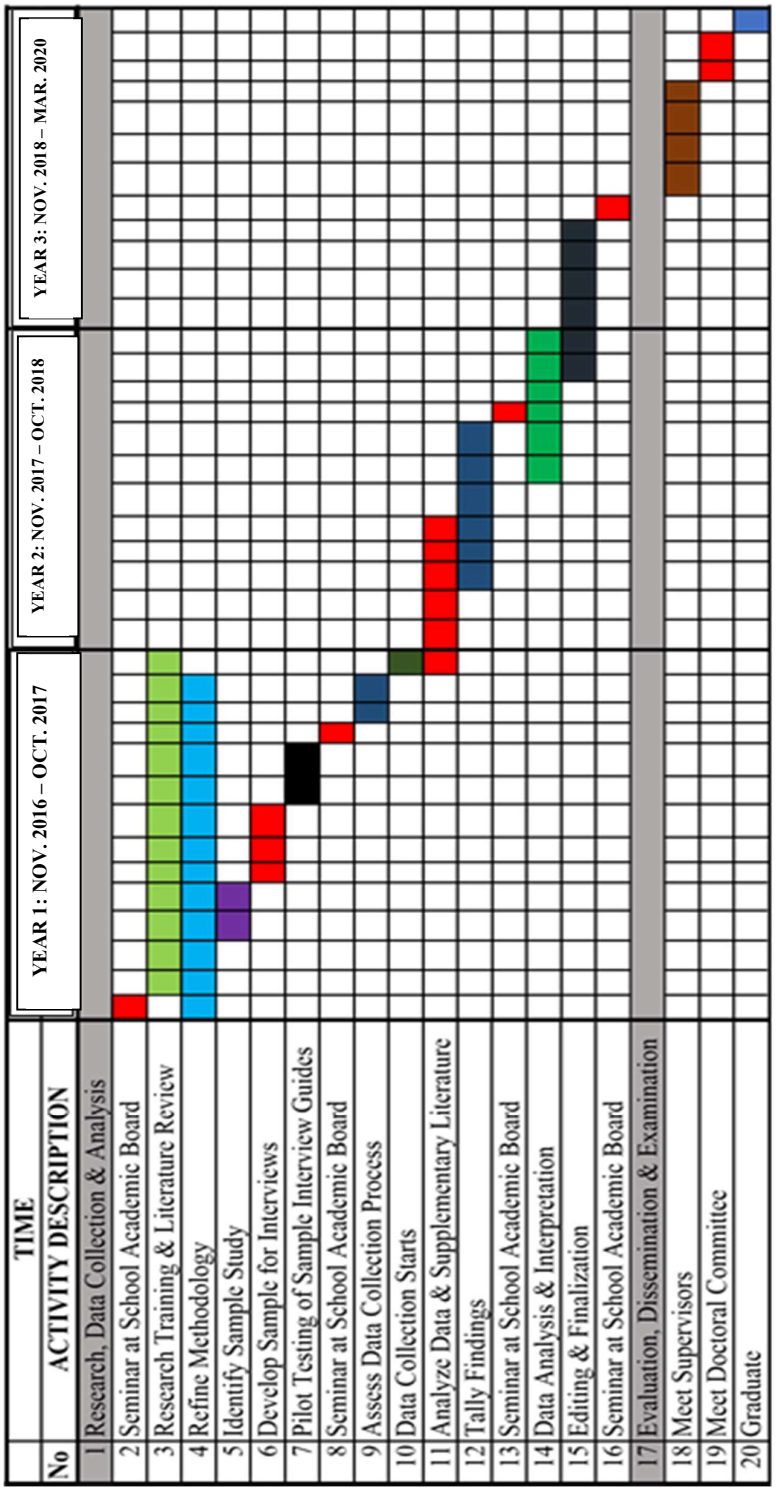
			Going for health check ups			some foods or eating portions of some foods e.g. diabetes and hypertension	Cleaning the environments and using dustbins	and can be reduced by eating portions of foods e.g. diabetes
33	"	Not sure	When I eat food and do exercises	No	Not sure	-	-	-
34	"	Not sure	When I eat food and do exercises	No	Not sure	-	-	-
35	"	Through going for testing and knowing your medical part	Eating proper food	No	N/A	None	Ensuring that information spreads everywhere and showing the importance	Agree
36	"	If he has the information on how to take care of himself	Eating a proper diet and exercising	Yes	Diseases that have to do with the current life we are living	Mostly no	Continuous awareness	Agree
37	"	Kwa kuangalia afya ya mwili	Going for tests in a hospital	Yes	The life we live	Through the health workers	By giving education to all the people	Strongly Agree. Because they provide free screening and information

38	“	Through eating healthy and living a comfortable life	Going for the test in the hospital	Yes	The life we live	Through the health workers	By giving education to all the people	Strongly Agree. Because they provide free screening and information
39		Eating healthy and living a comfortable life	Eating properly and doing exercises	Yes	Because of what we are taking on a daily basis	None	Visiting door to door	Agree. Going to the clinic for check up
40	“	Through what you can be able to see	Eating properly and doing exercises	Yes	Because of what we are taking on a daily basis	None	Visiting door to door	Agree. Going to the clinic for check up
41	“	Not sure	Follow advice	No	Diseases that are long term	None	_	Strongly Disagree
42	“	Through how he appears in my eyes	None because life has become hard	Yes	Mostly are the current diseases due to lack of exercise	None	Mostly check ups	Strongly Agree
43	“	Through what I can see in someone	Eating properly and exercising	Yes	Through what we are taking in our body	None on lifestyle	By creating awareness	Agree

44	"	If she has information on how to take care of his status	Eating proper diet and exercise	Yes	Diseases caused by the current life we live and things we do	Mostly None	Create Awareness	Agree
45	"	Being able bodies and not noticing illness or when the doctor tells you so	By ensuring that I avoid some unnecessary things and be able to fight things that may cause ill health	No	N/A	N/A	By ensuring there are measure and equipment and funds so that it can cover the whole community	Agree. By giving people good information about you and communicating with a good language that can reach the whole society.
46	"	By knowing your status	By going to the clinic for check up every time	Yes	Diseases which cannot be transmitted	Health Communication	By bringing clinics i.e. free medical camps in our area	Strongly Agree
47	"	By knowing your status	By going to the clinic for check up every time	Yes	Diseases which cannot be transmitted	Health Communication	By bringing clinics i.e. free medical camps in our area	Strongly Agree
48	"	Means no part of the body is ailing or has a problem and one is of sound mind	Through eating a balanced diet and avoiding junk food	Yes	Disease caused by what we eat or misconduct of cells	Health Communication through health workers	By giving us information on how to eat	Agree. The information given through

			and living in a clean environment				healthy e.g. nutritionists	the health clinic is good
49	"	Follow the instructions of the doctor on how to take your medicine and how to follow your diet to make you healthy well and maintain it	Take your medicine in time Portion food Do exercise to retain your healthy	Yes	It is not a transmitted diseases Leads from what we are eating and not going to see the doctor to be tested We can know early and prevent it	None	By telling us how to maintain the diseases and how to portion our meals	Strongly Agree. Because they teach us how to maintain our health
50	"	Visiting a doctor or a health facility	Eating healthy foods Visiting a health facility for health check up	Yes	By eating chemicals for a long time Diseases which are non-curable	Through digital media Health Communication	By giving community health talk	Agree. Because they are long term diseases

8.0 TIME PLAN


TIME
No
ACTIVITY DESCRIPTION
YEAR 1: NOV. 2016 – OCT. 2017
YEAR 2: NOV. 2017 – OCT. 2018
YEAR 3: NOV. 2018 – MAR. 2020
1 Research, Data Collection & Analysis
2 Seminar at School Academic Board
3 Research Training & Literature Review
4 Refine Methodology
5 Identify Sample Study
6 Develop Sample for Interviews
7 Pilot Testing of Sample Interview Guides
8 Seminar at School Academic Board
9 Assess Data Collection Process
10 Data Collection Starts
11 Analyze Data & Supplementary Literature
12 Tally Findings
13 Seminar at School Academic Board
14 Data Analysis & Interpretation
15 Editing & Finalization
16 Seminar at School Academic Board
17 Evaluation, Dissemination & Examination
18 Meet Supervisors
19 Meet Doctoral Committee
20 Graduate

9.0 BUDGET

No	Description	Amount (Kshs)
1	Registration &Tuition (3 Years)	440,600
2	Design Conferences (3) / Publications	420,000
3	Miscellaneous & running cost	200,000
	Sub Total	**1,050,000**
	Stationery and Textbooks	
4	Paper, Cartridge, Box files	80,000
5	Photocopying , Binding	45,000
6	Textbooks / Online Journals	90,000
	Sub Total	**215,000**
	Equipment	
7	HP Laser Jet Printer	45,000
8	Digital Camera	30,000
9	Laptop and Software	200,000
10	Digital Voice recorder	20,000
		295,000
	Data collection within Kenya (Nairobi)	
11	Tour and Travel	60,000
12	Field allowances: 2 Research Assistants	160,000
13	Pilot Study	20,000
14	Reviews, Editing, Printing and Binding	30,000
	Sub Total	**270,000**
	GRAND TOTAL	**2.000,000**

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