

**EVALUATING THE UPTAKE OF THE SERVICES OF COMMUNITY HEALTH
VOLUNTEERS IN MANAGING MALARIA AND DIAHRHOEA IN
CHILDREN IN KISUMU WEST SUB COUNTY, KISUMU COUNTY**

**BY
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**A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF PUBLIC HEALTH
(EPIDEMIOLOGY AND POPULATION HEALTH)**

SCHOOL OF PUBLIC HEALTH AND COMMUNITY

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DECLARATION

I declare that this thesis is my original work and has not been presented in any other University.

Bernard Odhiambo Otieno

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Sign..... Date

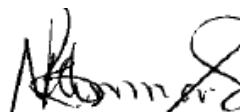
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DEDICATION

I wish to dedicate this work to my late dad Michael for his love of education and knowledge. To my mom Joyce for her tenacity. To my wife Mercy for her encouragement and to my two sons Mike and Nathan who made the effort worthwhile.

ABSTRACT

Child mortality remains a public health burden in many settings in Africa including Kenya. In 2007, the Government of Kenya adopted community strategy to reverse the poor health outcomes and meet SDG 3. This strategy anticipates home visits by community health volunteers (CHV) to disseminate information and provide appropriate referrals. The under 5 mortality rate in Kisumu West Sub County is 45 per 1000 live births, with malaria and diarrhoea accounting for 40% of the deaths. Suboptimal healthcare worker density, and high prevalence of diarrhoea and malaria in Kisumu County necessitate the use of CHVs to enhance healthcare interventions. CHV programmes have however experienced challenges of acceptance, and resource shortage, compromising on their ability to deliver health for all. The study evaluated the association of the home visits and the utilisation of the interventions offered by the CHVs to prevent and manage malaria and diarrhoea in children. The study specifically sought to determine uptake of interventions offered by CHVs in prevention and basic management of malaria, to determine uptake of interventions offered by CHVs in prevention and basic management of diarrhoea, and to determine the role of CHVs in facilitating community dialogue and action days and the influence of these in promoting the uptake of interventions against malaria and diarrhoea in children in Kisumu West Sub County. This was a descriptive cross sectional study. A pre-tested semi structured questionnaire was administered to 398 randomly selected households from a population of 5721 households. The samples were derived from 5 community units. Key informant interviews was also conducted among community health assistants. The study reported that 31.2% of those who had been unwell consulted a CHV, 50% of those who experienced malaria symptoms were treated by a CHV as opposed to 32.8% of those who experienced diarrhoea symptoms. Additionally, 89.9% of caregivers reported that health education campaigns had been conducted in their communities. Binary logistic regression analysis reported significant associations on the distribution of mosquito nets (OR=0.174, 95%CI =0.097-0.311, p =0.001), drainage of pools (OR=0.212, 95%CI =0.053-0.853, p =0.029), malaria diagnosis and drugs given (OR=6.68, 95%CI =4.327-10.519, p =0.001) giving fluids to children experiencing diarrhoea (OR=0.249 95%CI =0.078-0.794, p =0.019), and taking caregivers through preparation of ORS (OR=0.348, 95%CI =0.200-0.605, p =0.001). This study concludes that CHVs are effective in offering health services in the community. The results inform primary care coordinators which interventions require improvement to enhance community health.

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LIST OF ABBREVIATIONS AND ACRONYMS

AL	Artemether-Lumefantrin
ANC	Ante-Natal Care
ACT	Artemisinin Based Combination Therapy
CHAs	Community Health Assistants
CHS	Community Health Strategy
CHV	Community Health Volunteer(s)
CLTS	Community Lead Total Sanitation
CU	Community Unit
IMCI	Integrated Management of Childhood Illness
iCCM	Integrated Community Case Management
ITNs	Insecticide Treated nets
KDHS	Kenya Demographic Health Survey
KNBS	Kenya National Bureau of Statistics
KWHDSS	Kisumu West Health and Demographic Surveillance
SDGs	Sustainable Development Goals
MICS	Multiple Indicator Cluster Survey
ORS	Oral rehydration salts
ORT	Oral Rehydration Therapy
PHC	Primary Health Care
RDT	Rapid Diagnostic Tests
SPHC	Special Primary Health Care
UNICEF	United Nations Children’s Fund
WASH	Water Sanitation and Hygiene
WHO	World Health Organization

OPERATIONAL DEFINITION OF TERMS

Access	The delivery and coverage of community health services within a client's home or community
Caretaker	One that looks after or takes charge of a child also a custodian
Child	A person between the age of 0 to 59 months, boy or a girl.
Child health	Health of children between the age of 0 and 59 months' old
Child mortality	The probability of a child dying between 0 and 59 months
Community	A social group with a common territorial base
Health	A state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.
Morbidity	Incidence of ill health in a population.
Mortality	Incidence of death in a population
Mother	A woman who has given birth to a child.
Under-five mortality	The probability of a child dying before the fifth birthday
Uptake	The acceptance and utilisation of direction to seek medical attention in a health facility
Utilisation	The acceptance and use of community health services provided by a CHV within the home or community

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CHAPTER ONE

INTRODUCTION

1.1 Background Information

Access to healthcare services in Africa is hampered by a shortage of human resources for health –HRH (Kinfu *et al.*, 2009) and lack of timely access to health facilities (Falchetta *et al.*, 2020). The world health organisation (WHO) recommends a minimum ratio of 22.8 health care workers per population of 10,000, however the ratio in Kenya is 17.7: 10,000 and Kisumu lags further behind at 10: 10,000 (Keats *et al.*, 2018). Delays in seeking and accessing health interventions are a cause of sub-optimal maternal and child health outcomes (Lassi *et al.*, 2019). In order to provide timely interventions at the community level, preventive and referral services should be provided in a timely manner. Consequently, members of the community who are not part of the health system can be selected and trained in order to provide frontline health care services. The lay cadre of health care workers are known as community health workers or community health promoters or community health volunteers (CHVs).

The use of CHVs to render certain basic health services to their communities is a concept that has existed since the 17th Century (Pérez & Martinez, 2008). There have been innumerable experiences throughout the world with programmes ranging from large-scale, national programmes to small-scale, community-based initiatives. It is known that CHVs can play a crucial role in broadening access and coverage of health services in remote areas and can undertake actions that lead to improved health outcomes, especially, but not exclusively, in the field of child health (Jensen *et al.*, 2010).

The tasks undertaken by the CHVs strengthen community actions, develop personal skills or reorient health service provision, all key components of health promotion action (Tochukwu, 2022). In the process, these actions can act by preventing the occurrence of a disease in an individual, influence individuals to make healthier choices or empower individuals to take greater control of their health.

Community level interventions implemented through the lifecycle approach can improve child health and survival (Stevens *et al.*, 2016). The interventions can promote healthy behaviour, prevent disease transmission, encourage access to health services or empower communities (Haines *et al.*, 2007).

Compared to Kenya as well as other low and middle income countries, the standardised mortality rate for Kisumu for children under the age of 5 years was 2.4 and 2.9 times higher (Waruiru *et al.*, 2022). Kisumu West Sub County, is one of the seven sub counties in Kisumu County. The sub county is made up of 5 wards namely; North West Kisumu, West Kisumu, Central Kisumu, Kisumu North and South West Kisumu. The under 5 mortality in Kisumu is 45 per 1000 livebirths, which is higher than the national average at 41 per 1000 livebirths (Demographic and Health Survey Program, 2022). A housing and demographic surveillance system (HDSS) conducted in the study area found malaria as leading cause of death among children, accounting for about a third of the deaths. Diarrhoea also led to significant levels of mortality, accounting for 9% of the deaths of children in the area (Sifuna *et al.*, 2018). The prevalence of diarrhoea is also 18% higher compared to the neighbouring counties (KNBS, 2013). Diarrhoea accounts for 9% of the deaths among the children age 1 to 4 years (Sifuna *et al.*, 2018). A multiple indicator cluster survey (MICS) found that open defecation is practiced by 9% of Kisumu county residents while 22% do not dispose the faeces of children under the age of 5 years appropriately. Up to 18% of the households do not have access to treated drinking water (KISUMU COUNTY GOVERNMENT, 2023). The main source of water for domestic use in the sub county are local streams (43%) and community wells (40%) and they are not chlorinated (Sifuna *et al.*, 2014). Among children under the age of 5 years, the prevalence of diarrhoea is 18% with the children between the age of 13 to 23 months most affected (UNICEF, 2011). Prevention of disease transmission can be influenced by the use of treated water, hand washing at appropriate moments and proper disposal of excreta for enteric diseases.

In an attempt to reduce mortality and morbidity from malaria, and diarrhoea, CHVs have been trained to identify symptoms, treat simple cases (MoH, 2022) or refer cases appropriately with the aim of filling the skills gap by caregivers and ensuring timely access of health interventions. Indeed, initial treatment at home for malaria is encouraged to minimise the severe consequences of the disease (Breman, 2001). Decades after the declaration of Alma-Atta, problems in implementing PHC persist. The gaps in implementing the primary healthcare approach are both structural as well as implementation oriented. The number of CHVs recruited may not be adequate to cover all the households. Kenya implemented integrated community case management (iCCM) for sick children under 5 years in 2013. The interventions include the treatment of diarrhoea and malaria at the community level by CHVs (MoH, 2022). An iCCM gap analysis has revealed that in Kisumu County, the number of

CHVs can only cover 12% of the households optimally. An analysis of malaria related interventions reveal that 37% of the children were not tested for malaria and 7% of the cases with confirmed malaria did not receive Artemisinin-Based Combination Therapy (ACT) as per the management guidelines. The same analysis found that, against a target of 80%, only 1% of children with diarrhoea were given oral hydration salts (ORS) sachets and zinc supplements. (George *et al.*, 2015). While CHVs have been noted to improve uptake of interventions, the gaps which plague the implementation of the primary healthcare strategy including inadequate number of CHVs, inadequate supplies and training may lead to a sub optimal uptake of services by members of the community. The sub optimal coverage and implementation of the policy guidelines are likely to negatively impact on uptake, treatment outcomes and the health of the target population. This study will evaluate the uptake of the services the CHVs offer in community units and households in order to further inform areas of improvement in community health strategy which is a formal policy of the Ministry of Health and the government of Kenya.

1.2 Statement of the Problem

Kenya has implemented the community health services program since 2006. The program has a number of aims including but not limited to providing level one services for all the citizens, strengthening facility-community linkages and strengthening the delivery of integrated, comprehensive, and quality community health services for all population cohorts. Community based programs are meant to empower communities to adopt healthy behaviours, provide information to caregivers, enhance the skills of care givers in recognising danger signs and ensure timely referrals and access to primary health care facilities.

While progress has been made in many indicators, Kisumu County lags behind; the standardised mortality rate for Kisumu for children under the age of 5 years is 2.4 and 2.9 times higher in comparison to the national data. The under 5 mortality rate in Kisumu West Sub County is 45 per 1000 livebirths, way above the sustainable development goals(SDG) target of 25 per 1000 livebirths. Malaria, pneumonia and diarrhoea account for more than 60% of under 5 deaths. The locale has a high case load of malaria, and diarrhoea. Cases of dysentery have also been noted. In 2021 Chulaimbo County hospital, the hospital with the heaviest workload in the study site, reported 682 confirmed cases of malaria, 240 cases of diarrhoea. In the succeeding year, the hospital reported 817 cases of malaria, 253 cases of diarrhoea. Like primary healthcare, CHV programmes require political will and adequate funding to make a difference. The supplies in their kit have to be replenished and they must

be adequately trained and supervised. Their coverage, timing and intensity of their visits to households also influence the outcomes they provide. The absence of any, some or all of these elements may lead to sub-optimal results, low uptake of their services or their unacceptability in the community. Consequently, this study assessed the uptake of interventions offered by CHVs in the management of diarrhoea and malaria and the potential of those interventions to improve the health of children aged 0-59 months in Kisumu West Sub County.

1.3 Justification

In order to improve under 5 mortality outcomes, health systems have to be redesigned to improve access (Rutherford et al., 2010). Sub optimal access to high impact interventions against malaria and diarrhoea in children continues to result in morbidity, mortality, lost man hours and slow development (UNICEF, 2014). The government of Kenya is committed to meeting the health related SDGs (United Nations, 2016); and to provide universal health coverage to its citizens (Ministry of Health, 2020). CHVs promote healthy behaviours and preventive actions, but also provide referrals, and mobilise demand for services from other levels of the health system. CHVs have been deployed in the mobilization of households, provide health promotion and prevention services as well as clinical interventions such as IMCI (Glenton *et al.*, 2021). By regularly visiting households, providing health related information and referrals and galvanising communities to tackle health problems, well managed CHVs have been shown to improve access to healthcare, reduce child mortality rates and improve the developmental outcomes in children (Le Roux et al., 2020). With the advent of primary healthcare initiative and the key role of the community health volunteers, the uptake of their services in the households is likely to determine if the SDG targets are attained and how the county governments will continue investing in them.

1.4 Research Objectives

1.4.1 Main Objective

The general objective of this study is to assess the uptake of interventions offered by CHVs in the management and prevention of diarrhoea and malaria in children in Kisumu West Sub County, Kisumu County.

1.4.2 Specific Objectives

- i. To determine the uptake of interventions offered by CHVs in prevention and basic management of malaria in children in Kisumu West Sub County.

- ii. To determine the uptake of interventions offered by CHVs in prevention and basic management of diarrhoea in children in Kisumu West Sub County.
- iii. To determine the role of CHVs in facilitating community dialogue and action days and the influence of these in promoting the uptake of interventions against malaria and diarrhoea in children in Kisumu West Sub County.

1.5 Research Questions

- i. What is the uptake of interventions offered by CHVs in prevention and basic management of malaria in children?
- ii. What is the uptake of interventions offered by CHVs in prevention and basic management of diarrhoea in children?
- iii. Which roles do CHVs perform to facilitate community dialogue and action days and the uptake of interventions offered during the community action and dialogue days against malaria and diarrhoea in children in Kisumu West Sub County?

1.6 Significance of the Study

1.6.1 To Determine the Uptake of Interventions Offered by CHVs in Prevention and Basic Management of Malaria in Children in Kisumu West Sub County

The study found a significant association on the distribution of mosquito nets indicating that those who were diagnosed with malaria were less likely to have been given an ITN. This indicates the effectiveness of CHVs in identifying the homes which require ITNs and teaching them how to use these them, making CHVs an effective channel in the delivery of ITNs in a malaria endemic transmission zone. There was also a significant association between the guidance by CHVs to caregivers to drain pools of stagnant water adjacent to homesteads and the diagnosis of malaria in children as well as the provision of drugs to children with malaria. The effectiveness of CHVs in providing both health promotion messages as well as curative messages will enhance access to treatment, further the aims of PHC.

1.6.2 To Determine the Uptake of Interventions Offered by CHVs in Prevention and Basic Management of Diarrhoea in Children in Kisumu West Sub County

The study identified a significant association on the provision of additional fluids to children experiencing diarrhoea in the community, a key tenet of management of diarrhoea in the community. Although taking the caregivers through the preparation of ORS did not show statistical significance, the children whose caregivers were not taken those through the

preparation of ORS were more than twice as likely to be diagnosed of diarrhoea than those who were taught how to prepare ORS. Community based approaches are thus a significant way of managing diarrhoea and could reduce the time needed to effectively commence treatment in the community if factors which impede uptake from CHVs were addressed.

1.6.3 To Determine the Role of CHVs in Facilitating Community Dialogue and Action Days and the Influence of these in Promoting the Uptake of Interventions Against Malaria and Diarrhoea in Children in Kisumu West Sub County

The study found that caregivers who reported not to have heard about health education campaigns were likely not to have experienced a campaign on immunization compared to those households who reported hearing about them. Given the central role of dialogue days in organising campaigns and action days and the limited recall reported in the study, there is a need to restructure the messaging to enhance the uptick of health behaviours in the community.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Large scale community health volunteer programmes have been documented since the 1920s in China. The declaration of Alma-Ata, led to the launch of primary healthcare (PHC) and the widespread adoption of CHVs. The programmes however faced widespread challenges including sub-optimal funding, poor supervision and inadequate supplies. There was also the feeling that these programmes were second tier. These challenges led to a deviation from the original horizontally oriented PHC to the vertically oriented special PHC (SPHC). The advent of millennium development goals however led to the renaissance of CHV programmes in African countries including Kenya (Perry, 2013).

Due to weak monitoring and evaluation systems for large scale CHV programmes there is a dearth of information on the tasks assigned to CHVs and the impact of the activities on the health status of the people they serve. Other unknowns include the time they actually spend undertaking the tasks assigned and how receptive the communities they serve are to their services (Doggett & Frankel, 1992). The lack of information on the role of CHVs has led to debates on their relevance, effectiveness and acceptability and a consequent reduction in funding (Hodgins et al., 2021). Training and supervision of small scale CHV programmes makes them more effective compared to large scale national programmes. In addition, while the core mandate of CHVs is to enhance prevention, they tend to perform curative functions, creating a gap between what they do and what they ought to do (Berman & Gwatkin, 1986).

Studies have demonstrated that CHVs working in communities with inadequate access to health care are capable of improving maternal and child health indicators by improving both health education, access to health services and providing information to other healthcare cadres on the needs of the populations they serve (Witmer *et al.*, 1995). The context may however be different since the study was carried out in the United States of America.

By visiting households, facilitating neighbourhood conversations, and through community dialogue and action days, CHVs are expected to inspire change. The CHVs track progress through the community based health information system and refer cases which require professional medical attention to health facilities (Ministry of Public Health and Sanitation, 2013). The mere presence of a CHV however does not lead to change. The CHV has to perform the functions they are expected to perform, in the manner prescribed. They must also

find acceptance in the community in order to be effective. These depend on many factors. In a study conducted in Busia county, it was found that factors which affected the performance of CHVs during home visits included sex, age, level of education and experience (Crispin *et al.*, 2012).

In order to utilize the services offered by the CHVs, the services must be available and accessible in a timely, convenient and affordable manner (Committee on Healthcare Utilisation and Adults With Disabilities, 2018). A systematic review of services offered by CHVs found that the number of households served, the proximity of the CHV to the homes, the terrain, dispersion of the households in the catchment area and intensity of tasks affected the ability and frequency of CHVs to visit households (McCollum *et al.*, 2016). On the demand side, the following factors were found to affect the utilisation of services offered by CHVs; distance from a health facility was indirectly proportional to the utilisation of CHV services while distance to the home of the CHV was directly related. Lack of supplies reduced the uptake of the services offered by the CHVs. The least educated and the poorest were also more likely to utilise the CHVs. However, the poor tended to use the services because they were intentionally targeted by donor agencies who also providing other services. Counter-intuitively, the poorest were less likely to take-up referral services, perhaps due to the additional costs involved. As agent of community empowerment, CHVs were demonstrated to use the knowledge between the poor and rich (McCollum *et al.*, 2016)

While the contributions of CHVs are acknowledged, there are times rhetoric and evidence has clashed (Reality Check Approach Ghana Team, 2017) evidence of their effectiveness tend to come from small scale, NGO initiated, well-funded programs or (Hodgins *et al.*, 2021), vertical programmes(Perry, 2013) where the tasks are too specific to mirror the diverse roles a CHV in Kenya has been allocated. It has also been pointed out that even when they are successful, the factors which contribute to the success of interventions are too complex to be attributed to the CHVs on their own (J. Hill *et al.*, 2017).A combination of prior political commitment to support initiatives and lack of rigorous context specific evidence could lead to persistence with programmes whose outcomes and impact are sub optimal (Hodgins & Quissell, 2016).

2.2 To Determine the Uptake of Interventions Offered by CHVs in Prevention and Basic Management of Malaria in Children in Kisumu West Sub County

Kisumu West Sub County lies within a malaria endemic zone. Transmission is intense throughout the year, with annual entomological inoculation rates between 30 and 100 (Division of National Malaria Programme (DNMP) [Kenya] & ICF, 2021). The essential package for management of malaria in a malaria endemic zone is made up of case management for the already infected, and intermittent preventive treatment for pregnant women, insecticide treated nets (ITNs), and indoor residual spraying as prevention interventions (CDC, 2024). The WHO and UNICEF lists the use of bed nets, home treatment for infections, appropriate care seeking and compliance with advice from medical workers (Z. Hill *et al.*, 2004) among the key family and community practices on child care. CHVs have been used globally to fill gaps in primary healthcare either by acting as health promoters or providing biomedical services. Malaria prevention practices in households is directly related to the knowledge and beliefs of the population (Diema Konlan *et al.*, 2019). The distribution of insecticide treated nets (ITNs) is not an explicit task of CHVs, they are however expected to provide health advice to assigned households in a language the members of the household are conversant with. The advice should address, among other things, the prevention, transmission and management of communicable diseases (Government of Kenya, 2023). The use of ITNs has been associated with a reduction of child mortality by 17% and is listed as a key household and community practice (Z. Hill *et al.*, 2004).

Globally, 43% of households have adequate ITNs contributing to only 54% of people at risk of contracting malaria sleep under a mosquito net. ITN coverage for the population at risk is expected to be universal and the recommended ratio is a single ITN for every 1.8 people. The recommended means of distribution of ITNs is a mass campaign with Antenatal, immunisation and child health clinics considered as a supplementary channel in high contact areas. Community distribution is also recommended if feasible (World Health Organization, 2017). In Kisumu, 89% of households have a least one ITN, while 84% possess a LLIN. In a MICS survey, 78% of the respondents affirmed sleeping under an ITN the previous night (UNICEF, 2011). Even in households with at least one ITN, the percentage of children who slept below an ITN lags behind the percentage number of bed nets (UNICEF, 2011). This could be an indication of either an insufficient quantity of bed nets per household or caregivers not consistently using the available nets. A national malaria survey posted results which were different. In the lake endemic Malaria zone where Kisumu West Sub County is

located, bed net ownership was 78%. In the households with access to an ITN, 66% slept under the net and 58% of children under the age of 5 years had used an ITN. The use of bed nets by children was directly proportional to wealth quintiles and inversely related to age. The majority of households with an ITN obtained them during a mass distribution. Strikingly, despite the frequent access to households, CHVs were not among the sources of ITNs. Due to inadequate ownership and access to nets, 16% of the respondents in the lake endemic region reported not sleeping under a net the previous night (Division of National Malaria Programme (DNMP) [Kenya] & ICF, 2021). A study conducted in Zambia concluded that central point distribution of ITNs was more time saving and achieved a higher distribution coverage compared to house to house visits, and that household visits by CHWs did not have any effect on medium term retention of ITNs and none on usage (Wang *et al.*, 2016). A multi-country study done in Uganda, Cameroon and Nigeria however concluded that community directed interventions, involving CHVs doubled bed-net ownership and usage (Amazigo *et al.*, 2010) The differing results of the same intervention call for additional research and how best to improve the uptake of the interventions offered by CHVs.

There exists a disconnect between the health promotion programmes which advocate for behaviour change and referrals in case symptoms are identified and curative programmes which allow CHVs to prescribe drugs for uncomplicated illnesses, using a predetermined algorithm since the medicalization of community programmes diverts the attention of CHVs from their initial remit of health promotion (Jamison DT *et al.*, 2006). Kenya, having accepted to implement the iCCM, seems to have opted for the middle ground. Consequently, the CHVs are expected to undertake tasks which promote health, prevent disease, treat uncomplicated cases and refer complex cases.

Timely access to basic lifesaving interventions can avert a significant number of mortalities and cases of morbidity. CHVs have been known to improve the timeliness and access to diagnosis and treatment of malaria cases in primary healthcare facility as long as the facility was within a 5km radius of the homestead (Simba *et al.*, 2018). In this study, conducted in Tanzania, the CHVs sold the anti-malaria drug at a small profit which other studies have demonstrated to be a barrier to access (McCullum *et al.*, 2016) unlike the situation in Kisumu West. Prior to the intervention, a campaign had also been held explicitly encouraging caregivers to consult the CHVs if their child had fever (Simba *et al.*, 2018).

A malaria infection should be managed promptly and effectively. Only those who test positive via microscopy or a rapid diagnostic test should be treated for malaria, however, the inability to test should neither delay or prevent treatment (National Malaria Control Program, 2016). Community case management of malaria involves the diagnosis, using rapid diagnostic tests (RDTs) and treatment of malaria in the community using Artemether-Lumefantrin (AL). A study comparing the accuracy of malaria diagnosis between CHVs and medical laboratory technologists found no difference in the results obtained (Marita *et al.*, 2022). Another study however documented an over prescription of AL for patients with negative RDT results (Ndiaye *et al.*, 2013). Studies focused on equity and access found that community case management using CHVs increased access in general, but particularly for the poorest households in the community (Siekmans *et al.*, 2013), (Kisia *et al.*, 2012). While there is a presumption that CHVs will find acceptance in the community since they are members of the community and are chosen by the community, at least one study had participants who questioned the ability of the CHVs to accurately treat their illness (Chuma *et al.*, 2010) or to keep client information confidential. Furthermore, clinicians did not think the CHVs were adequately trained to either identify other ailments which the patient may have or to give proper dosage of the malaria drugs (Owek *et al.*, 2017).

A history of giving anti malaria drugs to all patients with fevers resulted in the misuse of anti-malaria drugs and an expectation from patients that they must get an anti-malaria drug whenever they present with a fever. Healthcare workers are thus forced to give out AL to patients with negative malaria rapid diagnostic test (RDT) results to keep them happy. Alternatively, the patient may decide to source for the drugs from retail pharmacies. Furthermore, the ruling out of malaria by an RDT has in some cases resulted in the over prescription of antibiotics (World Health Organisation, 2013). In a malaria endemic area CHVs are thus faced with the choice of referral for all febrile children to the nearest health facility or ruling out malaria and recommending amoxicillin. In a study conducted in Lamu and Malindi, Kenya, as a pilot for the implementation of iCCM, the utilisation of CHVs to treat malaria in children improved from 2% to 35% within a period of one year. The poorer households were twice as likely to utilise CHVs compared to the least poor households (Kisia *et al.*, 2012). An end line assessment for a pilot project on iCCM conducted in Bondo, in the neighbouring county of Siaya, found that the knowledge of caregivers on the curative roles of CHVs increased from 8% to 66%. The improved knowledge resulted in the percentage of caregivers who first sought treatment from CHVs increasing from 2% to 31%. A majority of

the caregivers however sought initial help from dispensaries and health centres as opposed to CHVs. Lack of commodities to treat the sick children undermined the confidence of the caregivers in the CHVs and thus affected the uptake of their services. It was also noted that in some cases, the caregivers did not honour the referrals recommended by the CHVs (Kabue Mark, Otieno Dan, Shiroya-Wandabwa Makeba, Subramanian Savitha, Tsuma Laban, 2016).

In a study to find out the lessons learned since the inception of iCCM, it was proposed that additional research be conducted to find out determinants of non-use of iCCM services by caretakers and develop strategies to increase the uptake of iCCM (Young et al., 2004). As the reviewed studies have demonstrated, in spite of the availability of CHVs, the majority still prefer health facilities when their children are ill. This may lead to loss of valuable time when children are suffering from malaria. The presence of CHVs has in some studies not led to consistent use of ITNs, a key prevention method against malaria. It is against this background that this study investigated the uptake of interventions offered by CHVs in prevention and basic management of malaria in children in Kisumu West Sub County.

2.3 To Determine the Uptake of Interventions Offered by CHVs in Prevention and Basic Management of Diarrhoea in Children in Kisumu West Sub County

Diarrhoea can be classified as acute and watery, bloody or persistent. While acute diarrhoea is the most common, persistent diarrhoea is associated with a disproportionately high risk of death (Hartman *et al.*, 2023). Contaminated and poor quality complimentary foods are associated with an increased risk of diarrhoea while optimal complimentary feeding reduces the risk of death. Poor hygiene and lack of access to sanitation facilities is responsible for 90% of all childhood diarrhoea while promotion of hand washing has been demonstrated to reduce diarrhoea by up to 33% (Bhutta *et al.*, 2008). A 55% reduction in mortality was associated with access to sanitation facilities (Z. Hill *et al.*, 2004). The administration of oral rehydration therapy (ORT) has also been demonstrated to prevent mortality occasioned by watery diarrhoea in all but the most severe of cases (Z. Hill *et al.*, 2004). The use of ORT to manage diarrhoea in children has stagnated at between 30% to 38% occasioned by the lack of parental understanding of the benefits of the intervention (DuPont, 2008; Santosham *et al.*, 2010; UNICEF, 2009).

The presence of effective interventions alongside sub-optimal impact of the interventions is a testament to both the complexity of changing behaviours as well as unavailability of resources and a gap in knowledge and skills of caregivers. To reduce diarrhoea associated

morbidity and mortality, the Government of Kenya issued policy guidelines on the management of diarrhoea for children below the age of 5 years (GOK, 2014). Caregivers are expected to ensure adequate food and fluid intake while a child is experiencing diarrhoea. CHVs alongside other health professionals are to be trained to provide health promotion, preventive and curative services in the community. The guidelines also specify how diarrhoea should be managed in health facilities and in retail outlets. From the foregoing, the government of Kenya recognises the express role of the caregivers and CHVs in the management of diarrhoea in children. Studies evaluating the use of Community Health Strategy (CHS) and CHVs have demonstrated the need for further research to define the outcome of CHV interventions in managing diarrhoea in children. A study conducted in Nyanza province Kenya found that high-performing community units have the highest incidence of diarrhoea in children. The authors suggest that this counter-intuitive finding may have been occasioned by the prioritization of areas of high incidence of diarrhoea in the formation of community units (Kawakatsu *et al.*, 2017). A study comparing the use of Zinc and ORT to manage diarrhoea in children in community units(CU) implementing iCCM compared to those not implementing iCCM, it was found that the use of ORT to manage diarrhoea increased by 8% in the iCCM CUs and 20% in the comparison CUs. CHVs managed 22% of the cases. Additional probing found that the comparison CUs had better baseline line end-line data because they were implementing a WASH intervention supported by UNICEF (Kabue Mark, Otieno Dan, Shiroya-Wandabwa Makeba, Subramanian Savitha, Tsuma Laban, 2016), bringing to the fore, once again, the tension and performance of CHVs serving vertical well-resourced and supervised programs and horizontal programs with many tasks. Similar conclusions were reached by a study conducted in Uganda which found that CHV performance was better in pilot programmes as opposed to scaled up programs. In this study the CHWs did not have a good score in the identification of signs, symptoms and diagnosis of diarrhoea. Completion of secondary school education. a recent supervisory visit and a catchment area of less than 100 households were associated with better CHV performance (Wanduru *et al.*, 2016).

While there has been an increase in the number of caregivers who administer ORT when children experience episodes of diarrhoea, the majority visited health facilities as opposed to either preparing the solution themselves or visiting a CHV for help. This findings were similar in a study conducted both in Bondo (Kabue Mark, Otieno Dan, Shiroya-Wandabwa Makeba, Subramanian Savitha, Tsuma Laban, 2016) and nationally (Kenya National Bureau

of Statistics (KNBS) and ICF Macro, 2010). Another study, carried out in Kibera- a slum in Nairobi County and Asembo – a rural setup in along the shores of Lake Victoria Siaya county, made the following observations; caregivers visited health facilities to get drugs other than oral rehydration solutions which did not seem to stop the diarrhoea. They also observed that they would not purchase ORS from shops given that it was free at health facilities even though they were unable to access health facilities given that they could not afford the fare. Caregivers in the study noted that their main source of knowledge about based based facility-based healthcare workers and that children who had diarrhoea took less breast milk and other foods due to diminished appetite (Blum *et al.*, 2011).

Exclusive breastfeeding (EBF) is a cost-effective intervention associated with a reduction in diarrhoea. CHVs can effectively promote EBF to caregivers, however for their efforts to be effective, the timing and the intensity of these visits should be optimised. A higher frequency of visits, especially in the early post-natal period is associated with a greater uptake of the CHV recommendations (Gilmore & Mcauliffe, 2013). CHV visits to mothers within 3 days of giving birth are recommended and most effective, however, this recommendation is not practiced by a majority of CHVs(Moimaz *et al.*, 2017).Post-natal clinic visits are the main source of EBF information in Kenya. CHVs, although noted to be effective if providing intensive counselling in a pilot environment do not have a statistically significant impact in the normal scaled up settings(Mituki-Mungiria *et al.*, 2020; Ochola *et al.*, 2013). An additional challenge in Kisumu West is the high prevalence of HIV which may sometimes act as a barrier to EBF. To enhance the ability of health workers to promote exclusive breastfeeding, additional training to foster attitude change has been recommended (Moussa Abba *et al.*, 2010).

Promotion of safe hygiene is the single most cost-effective means of preventing infectious disease(Curtis *et al.*, 2011). Unsafe disposal of faeces, the consumption of untreated water, the failure to wash hands with soap after defecating and prior to eating all portend great risks to health. Hand washing at critical moments – before eating, after defecating and after disposing a baby’s excreta- has been shown to reduce diarrhoeal diseases by up to 30% and by between 43- 47% if soap is used (Curtis *et al.*, 2011). In low income settings, the introduction and the expansion of latrine coverage is another intervention which has been shown to reduce faecal-human contact and consequently the risk of diarrhoeal diseases (Clasen *et al.*, 2010). A third highly effective method of preventing the spread of water borne diseases spread through the faecal-oral route is the treatment of water prior to drinking. In a

resource poor setting, the most readily available means of water treatment is boiling and to a limited extent, the application of chlorine. Sanitation promotion is one of the most important roles the health sector can have in environmental health planning, because behaviours must be changed to increase householders' demand for and sustained use of sanitation, especially in rural areas where the pressure for change is lower (Mara *et al.*, 2010). Promotion here includes activity to stimulate demand for sanitation, and also to effect changes in hygiene-related behaviour such as hand washing with soap (Cairncross *et al.*, 2010).

CHVs are tasked with identifying water, sanitation and hygiene related diseases and carry out health promotion activities aimed at eliminating them. The practices which the guidelines foresee them undertaking include identification of water sources, their contaminants and means of protecting them; the proper treatment and storage of drinking water and proper hand washing, faecal and waste disposal methods (Ministry of Health, 2013). In order to impart knowledge and achieve behaviour changes, the CHVs use personal example and provision of information and education which may make a short term difference in behaviour but whose long term effect might be minimal (De Buck *et al.*, 2017). At the same time, there are resource related factors which influence both hand washing and the construction and use of improved latrines. Perceptions that hand washing requires too much water, soap is expensive or the VIP latrines are too costly to build have a negative influence on hand washing and toilet use (Moyo & Moyo, 2017), (White *et al.*, 2020). While tackling Water, Sanitation and Hygiene (WASH) within the community, the CHVs is confronted with a twofold challenge, the need to convince members of the community to invest in the necessary infrastructure and supplies and the need to possess the competence necessary to influence behaviours both in the short and long term.

In a study conducted in Mwingi, Kenya, the heads of households which did not have latrines were identified and followed up by CHVs to have them constructed. At the end of the project, 18 months later, the intervention sites had a 27% increment of pit latrine coverage as opposed to only 1% in the comparison sites (Mativo Nzioki & Korir, 2018). A study conducted to compare the outcomes of community health strategy on maternal and child health indicators in rural agrarian (Kakamega), peri-urban (Kisumu) and nomadic (Garissa) in latrine use and water treatment in all the three socio-demographic sites (Olayo *et al.*, 2014). The change is attributed to provision of information and evidence to households leading to change in attitude and ultimately, practice. The study however noted the difference in outcomes across the various health indicators it investigated and advocated for context specific adjustments in

implementation of the promise of community health strategy is to be uniformly realised (Olayo *et al.*, 2014). Interventions geared at the prevention and management of diarrhoea in children are many and the studies evaluated tended to concentrate on single interventions supported either as vertical programme or pilots. This study investigated a range of interventions recommended for preventing and managing diarrhoea, the uptake of the curative intervention and the association of CHV interventions and a diagnosis of diarrhoea in children.

2.4 To Determine the Role of CHVs in Facilitating Community Dialogue and Action Days and the Influence of These in Promoting the Uptake of Interventions against Malaria and Diarrhoea in Children in Kisumu West Sub County

The prevention and control of Malaria and Diarrhoea require social and behaviour change and therefore community dialogue is appropriate in order to reduce their incidence and improve the treatment in the households and the community. Awareness, social norms and community factors play a major role in modifying the behaviours which lead to successful prevention efforts and the timely seeking of medical attention whenever children display signs of the diseases. The community dialogue approach presumes that members of the community are willing to participate. It also presumes that the process will be repeated a number of times in order to form habits and that even if not all the members of the community participate, there will be spill over effects from those attending to the households which do not participate. It is also anticipated that the health systems will be strengthened in tandem to meet the increased demand for goods and services occasioned by the dialogue and action days (Smith & Rassi, 2018). It is anticipated that a healthcare worker and at least one CHV will attend these sessions. The healthcare workers attend to answer any technical question which may arise (Malaria Consortium and Ministry of Health (Zambia), 2012).

The Kenya National Community Health Strategy anticipates that community units will have community dialogue days quarterly and action days monthly (Ministry of Health Government of Kenya, 2020). CHVs collect and summarise data which is discussed during community dialogue days. The information is expected to stimulate dialogue and inform collective decisions and inspire change in the community (Ministry of Health - Kenya, 2013). There are however concerns about the quality of the data collected by the CHVs with a reported consistency of just 15%. The inconsistency has been attributed to lack of training of reporting indicators, lack of standard tools and high workload occasioned by the different needs of vertical programmes (Regeru *et al.*, 2020). In a study validating the data collected by CHVs

through research assistants, data on measles vaccination rates, exclusive breastfeeding, the use of skilled birth attendants, sleeping under ITNs and stable food availability were discrepant while data on the number of ante-natal clinic attended and latrine availability were concordant leading the authors to conclude that the community based information could be relied upon to guide planning but not policy formulation since policy formulation required higher levels of reliability (Otieno *et al.*, 2012). Given that data collected by CHVs is summarised and presented by community health assistants (CHA) to spur dialogue, the role this data plays in defining interventions CHAs on the role the dialogue plays in decision making and their views on the data. A study conducted in Kisumu, Garissa and Kakamega in Kenya, found that community dialogue days attracted up to 5 times more participants than community action days (Olayo *et al.*, 2014). Given that community action days collectively implement the resolutions of the community dialogue days, a reduced participation may result in sub-optimal implementation of resolutions at community and household levels.

While community dialogues possess potential to transform health outcomes, these potential may not be realised if the community does not access to resources necessary for the requisite changes (Martin *et al.*, 2017). The study examined the participation of CHVs in dialogue and action days and the outcomes of the health campaigns which was used as a proxy measure of the outcomes of the dialogue and action days.

2.5 Conceptual Framework

CHVs are embedded in the community and integrated to the health system to provide information on appropriate health behaviours to household members and proactively identify cases which need to be managed in the community and appropriately refer the other cases to the health facilities. The performance of the CHVs will be measured by monitoring the utilization of services offered by the CHV, evaluating the uptake of health seeking behaviour and adoption of practices promoting health by members of the community as well as their ability of CHVs to empower the community.

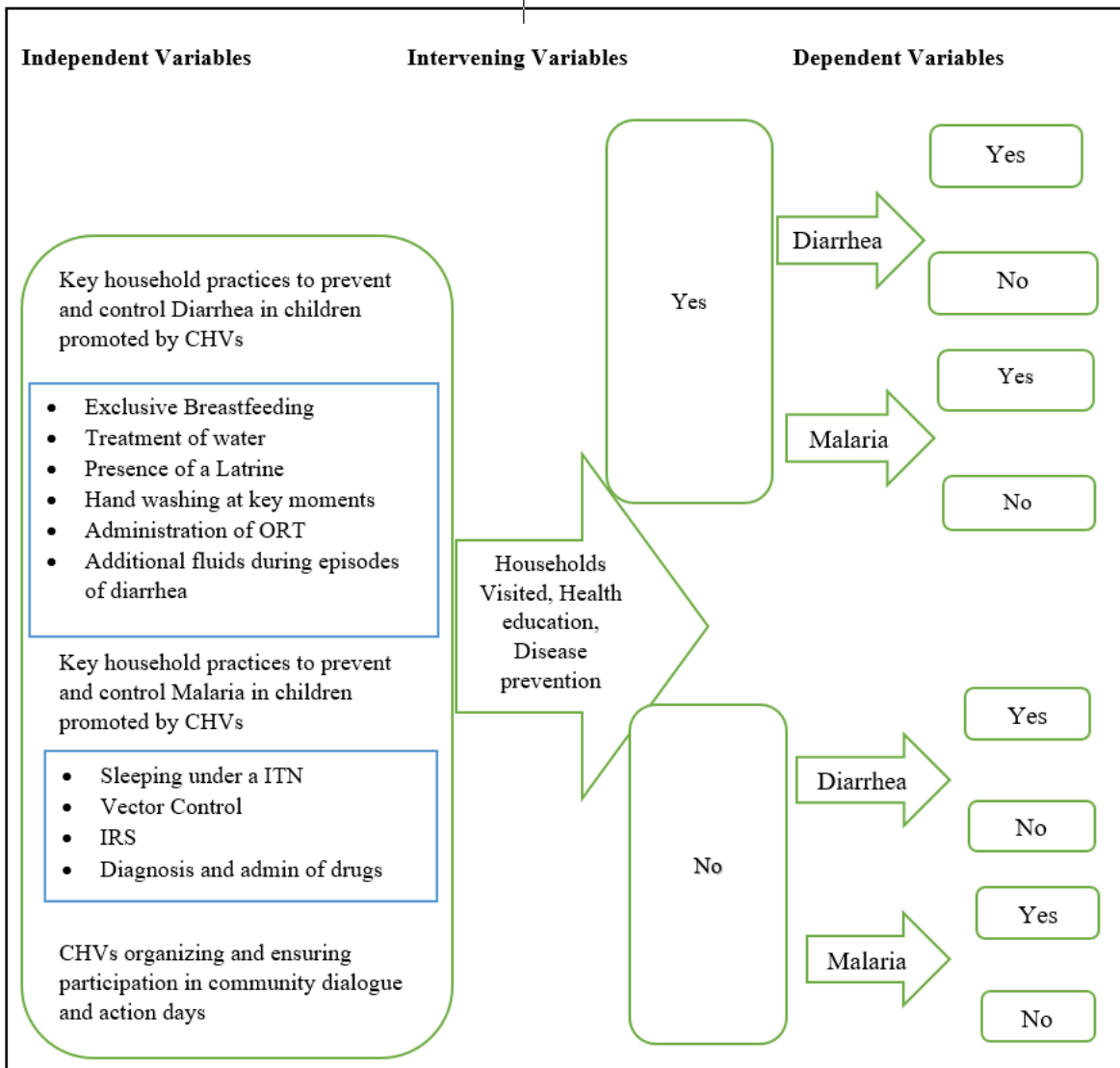


Figure 2.1: Conceptual Framework

Source: High Impact Practices (2015)-Modified by literature review

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the research methodology that was used to conduct the study; it includes explanation of data collection, quantitative and qualitative approaches and statistical analysis procedure that were used. Overall the section has; study design, study population, sample size determination and sampling techniques, inclusion and exclusion criteria of the study participants, data collection, analysis and presentation methods used and ethical consideration.

3.2 Study Area

Kisumu West Sub- County in Kisumu County lies between longitudes $34^{\circ} 36' 0''$ East and latitudes $0^{\circ} 10' 0''$ South. It covers an area of 168.7km^2 with a population density of 387 people per sq.km. It has a population of approximately 70805 with 37433 females and 33372 males.

Northwest Kisumu has the following wards; East Karateng, West Karateng, Sunga and Marera. West Kisumu is comprised of Newa, Upper Kadongo , Lower Kadongo, South Kapuonja and North Kapuonja .

3.3 Study Design

In order to collect data associated with the services offered by the CHVs and their uptake in households and the community, a descriptive cross sectional study design was used. Both qualitative and quantitative data were collected. Systematic sampling was then used to sample eligible respondents within community units. In each community unit, one household was randomly selected from the sampling frame and the caregiver in the household interviewed. After that houses were selected in intervals of 14 until the assigned number of households in a community unit was attained. If a caregiver was absent or declined, the next household in the sampling frame was chosen and the caregiver interviewed. For the purposes of this study 2 community units were selected from North-west Kisumu (East Karateng and West Karateng) since North West Kisumu had 4 community units and 3 Community units from West Kisumu (North Kapuonja, Lower Kadongo and Newa) since West Kisumu had 5 community units thus ensuring that more than 50% of the community units were sampled. The units were selected through lottery. To ensure each unit had an equal chance of being selected, 4 papers with the name of each sub location in North West Kisumu were placed in

one bowl and 5 papers with the name of each sub location in West Kisumu were placed in another. Upon drawing, a paper, the name of the sub-location was noted, the paper refolded and returned to the bowl, the papers mixed and another drawing made. If a sub location that was selected was reselected, the paper was returned without the name of the sub location being noted.

Qualitative data were collected from community health assistants(CHAs) using a structured key informant interview guide. The CHA in each community unit selected for the study was interviewed, thus 5 interviews were administered by a trained data assistant.

3.4 Target Population

The target population for this study were the caregivers of children 0-59 months from the following community units; East Karateng, West Karateng, North Kapuonja, Lower Kadongo and Newa and the CHAs of the respective community health units. The selected community units had 5,721 households.

3.5 Study Population

The study population consisted of 412 households with children aged 0-59 months registered in the 5 community units in Kisumu West Sub County. The study population also consisted of CHAs serving the study area.

3.6 Sample Size Determination

Sample size with a confidence level of 95% and a margin error of +-5% was used to determine the study size from 5721 households which give a sample size of 374. Sample size was adjusted by adding 10% hence the corrected sample size was 412 households.

Sample size was determined using the Yamane *et al* (1967) formula as follows;

$$n = N / [1+N (e)^2]$$

Where:

n = sample size

N = Total population (5721)

e = sampling error (0.05)

$$n = 5721 / [1+5721 \times (0.05)^2]$$

$$= 5721 / 15.3025$$

$$= 374 + 10\% \approx (37)$$

$$= 412$$

3.7 Data Collection Tools

Quantitative data were collected using a household questionnaire which was developed by the researcher as guided by the conceptual framework. The questionnaire was divided into five sections. The questionnaire was used to collect data on the socio demographic and socio economic profile of the caregiver, the child's background, breastfeeding practices, WASH profile of the household, bed net usage, immunization progress of the child, home visits by the assigned CHV and diarrhea and fever management practices in as advised by the CHV and practiced by the caregiver.

Key informant interview guides collected information from CHAs, the designated supervisor of the CHVs. The KII guide collected information of the functionality of the Community Health Units, the workload of the CHAs, the training of the CHVs, the roles of the CHVs, the challenges the CHVs face and the proposed means of overcoming the stated challenges. Data were collected by the researcher and 4 trained research assistants (RAs).

3.8 Reliability and Validity of Data Collection Tools

To ensure reliability and validity, the RAs were trained and the questionnaire piloted in Kisumu North ward in Kisumu West constituency in Kisumu County thus ensuring community in the study area did not participate in data collection. Fifty questionnaires were administered to caregivers and subsequent to the administration, alterations to the sequencing and wording of questions was undertaken. In order to ensure that the questions posed to the caregiver were adequate and appropriate, construct and content validity were assessed after seeking advice and concurrence from the supervisors and professionals in the field. Cronbach's Alpha was used to test internal consistency. The study accepted Cronnbach's Alpha scores of 0.80. The researcher also accompanied each RA for one day to ensure the questions were being asked in a standard way. To enhance inter rater reliability, data collectors were trained and guided on how to record observations.

3.9 Sampling Procedure

A pre-determined sample size of 412 households from the five community units was interviewed. Using the community units (CUs) as a basis of stratification, stratified random sampling was used to sample mothers with children 0-59 months to participate in the survey. Using CUs with their respective number of households as a sample frame, 412 households were selected from the community units based on probability proportional to size. In each sampled community unit, a list of household heads was used to provide the sampling frame.

One household head was randomly sampled from the list to give a random start. Systematic sampling was then used to sample eligible respondents within each unit using a sampling interval of 14.

Table 3.1: Calculation of Sample Size

Community Unit	Number of Households	of Sample Size	+10%
Lower Kadongo	1124	$1124/5721 \times 374 = 73$	81
E. Karateng	1136	$1136/5721 \times 374 = 74$	82
W. Karateng	1511	$1511/5721 \times 374 = 99$	109
Newa	778	$778/5721 \times 374 = 51$	56
North Kapuonja	1172	$1172/5721 \times 374 = 77$	84
Total	5721	374	412

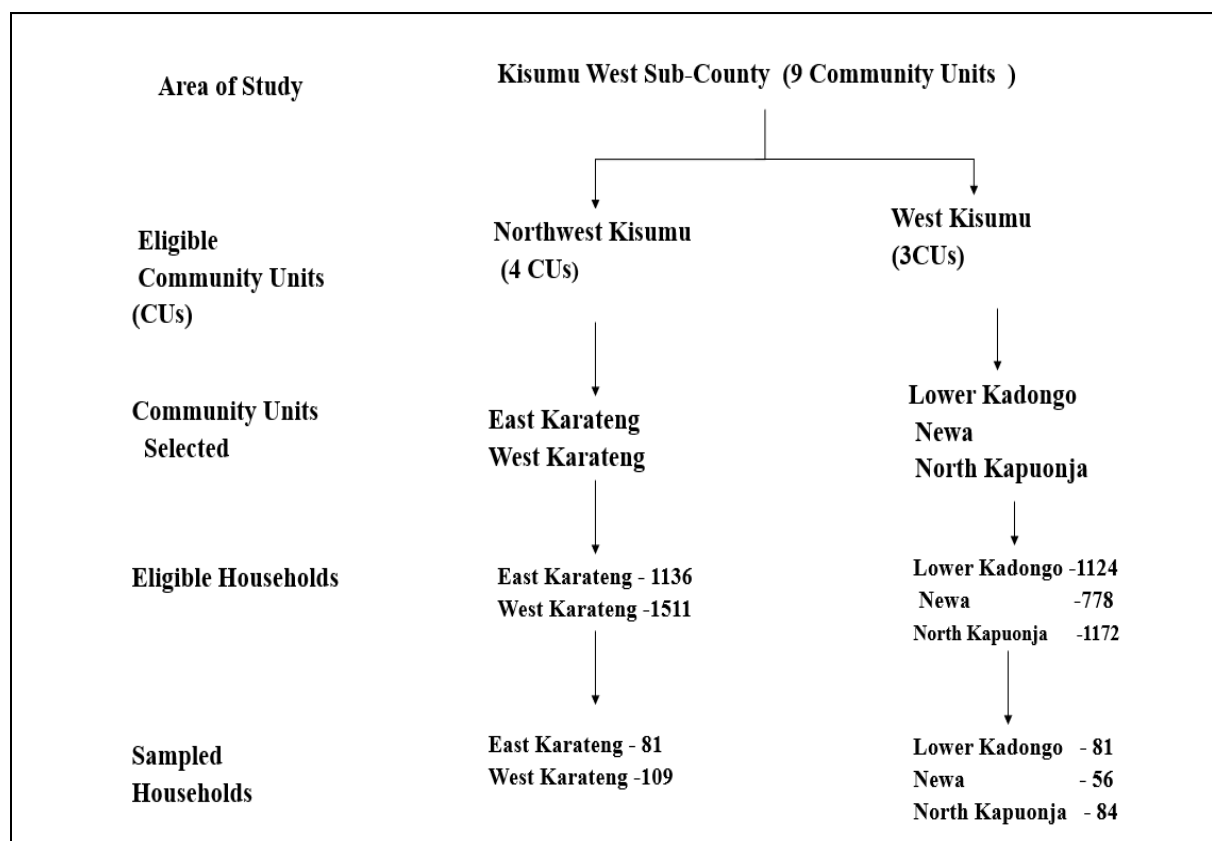


Figure 3.1: Sampling Schema

3.9.1 Inclusion Criteria

Households with children aged 0-59 months in the 5 community units, the caretakers of the children and CHAs of the community units from which the data were collected.

3.9.2. Exclusion Criteria

Any household which withheld consent

3.10 Data Collection

Trained RAs administered pre-tested Semi Structured Questionnaires for caregivers of children aged 0-59 months. The questionnaire was composed of socio-demographic information of the child caregiver and knowledge and practices of household members concerning home-management of the sick infants and children.

Key informant interviews were held with five Community Health Assistants (CHAs) who are in charge of CHVs to ascertain the role the CHVs fulfil in organising community dialogue and action days, basic management of malaria and diarrhoea and promoting the adaptation and practice of key family health practices. The completed questionnaires were verified prior to the data being entered into a designed database throughout the survey.

3.11 Data Analysis Plan

3.11.1 To Determine the Uptake of Interventions Offered by CHVs in Prevention and Basic Management of Malaria in Children in Kisumu West Sub County

Data were entered in an excel sheet and the information entered included the demographic characteristics of the care giver, if the CHV visited the household, the specific diarrhoea and malaria prevention practices dispensed during the households visits. Data on the practices advocated by CHVs for the management of malaria, fever and diarrhoea in children were also entered. The data were then exported to STATA and a chi-square contingency table analysis was performed to establish the correlation between CHVs interventions and the selected under 5 health indicators. Variables which were statistically significant with chi square test of association were followed with logistic regression analysis to establish the strength of the association.

3.11.2 To Determine the Uptake of Interventions Offered by CHVs in Prevention and Basic Management of Diarrhoea in Children in Kisumu West Sub County

Data were entered in an excel sheet and the information entered included the demographic characteristics of the care giver, the household visits conducted by the CHV, the health promotion practices advocated by the CHVs including the promotion of exclusive breastfeeding, weaning and opportune moments for hand washing. The data were then exported to STATA and a chi-square contingency table analysis was performed to establish the correlation between CHVs interventions and the selected under 5 health indicators. Variables which were statistically significant with chi square test of association were followed with logistic regression analysis to establish the strength of the association.

3.11.3 To Determine the Role of CHVs in Facilitating Community Dialogue and Action Days and the Influence of these in Promoting the Uptake of Interventions against Malaria and Diarrhoea in Children in Kisumu West Sub County

Qualitative data from key informant interviews conducted with community health assistant on the role of CHVs in mobilising the community to attend community dialogue days, influencing the health issues to be discussed during the dialogue days and follow up to ensure they are implemented on community action days were transcribed and summarised and presented. Verbatim quotations were used to highlight the key themes and major findings.

3.12 Ethical Considerations

Authorisation to carry out the survey was obtained from the ethics committee of Maseno University ethical review board. A written informed consent was read to the interviewee prior to the interview by the RAs and the interviewee were only interviewed if they assented. The RAs were trained on the rights of the participants, the freedom of the participants to decline and/or withdraw from the survey to withdraw at any time without having to give a justification. The filled forms were sealed in an and sent to the researcher. Data entered in the computer were password protected and when emailed were also encrypted. The study was susceptible to recall bias due to self-reported outcomes. The study was also susceptible to interviewer bias since different interviewers were used over a number of days. To minimise interviewer bias, the interviewers were trained and guided on how to record observations. The cross sectional data collected through a questionnaire was triangulated through key informant interviews to limit recall bias.

CHAPTER FOUR

RESULTS

4.1 Social and Demographic Characteristics of the Caregivers

The study population included caregivers in 412 households. However, 398 caregivers were interviewed giving a response rate of 96.6%. 14 participants did not respond. Of the 398 caregivers interviewed, 97.7% of them were female, 45% were aged between 19 and 23 years, 72% had completed primary education, 69.3 per cent were married and 64.1% of the respondents had an annual income of between 10,000 to 50,000. Table 4.1 below contains a summary of the characteristics of the caregivers who were interviewed.

Table 4.1: Socio-demographic Characteristics of Caregivers

		Frequency	Percent	Valid Percent	Cumulative Percent
Age	18 yrs and below	29	7.3	7.3	7.3
	19-23 yrs	150	37.7	37.7	45.0
	24-27 yrs	98	24.6	24.6	69.6
	28-34 yrs	65	16.3	16.3	85.9
	35-39 yrs	35	8.8	8.8	94.7
	40 yrs and above	21	5.3	5.3	100.0
	Total	398	100.0	100.0	
Gender	Female	389	97.7	97.7	97.7
	Male	9	2.3	2.3	100.0
	Total	398	100.0	100.0	
Level of education	None	6	1.5	1.5	1.5
	Pre School	160	40.2	40.2	41.7
	Primary	121	30.4	30.4	72.1
	Secondary	41	10.3	10.3	82.4
	College	50	12.6	12.6	95.0
	University	19	4.8	4.8	99.7
	Do Not Know	1	.3	.3	100.0
Total	398	100.0	100.0		
Marital status	Married	276	69.3	69.3	69.3
	Single with non-regular partner	14	3.5	3.5	72.9
	Single with a regular partner	6	1.5	1.5	74.4
	Cohabiting	54	13.6	13.6	87.9
	Widowed	47	11.8	11.8	99.7
	Divorced/ Separated	1	.3	.3	100.0
	Total	398	100.0	100.0	
Annual Income	Less than 10,000	28	7.0	7.0	7.0
	10,000-50,000	227	57.0	57.0	64.1
	51,000-100,000	102	25.6	25.6	89.7
	More than 100,000	41	10.3	10.3	100.0
	Total	398	100.0	100.0	
Occupation	Total	398	100.0	100.0	
	Unemployed	188	47.2	47.2	47.2
	Farmer	31	7.8	7.8	55.0
	Trading	100	25.1	25.1	80.2
	Civil Servant	52	13.1	13.1	93.2
	Professional Self Employed	11	2.8	2.8	96.0
	Others	15	3.8	3.8	99.7
	Total	1	.3	.3	100.0
Total	398	100.0	100.0		

The sample comprised of 398 children between the ages of 1 and 3 years and 97% of the children were alive. The proportion of children who had experienced fever, diarrhoea and symptoms of malaria in the two weeks prior to the interview were 52%, 50% and 47% respectively. Table 4.2 is a summary of the children in the sampled households.

Table 4.2: The Characteristics of the Children in the Sampled Households

Characteristics of children		Frequency	Percent	Valid Percent	Cumulative Percent
Age	Less than 1 year old	36	9.0	9.0	9.0
	Between 1 year and 2 years	357	89.7	89.7	98.7
	Between 2 years and 3 years	5	1.3	1.3	100.0
	Total	398	100.0	100.0	
Fever	Experienced fever in the last 2 weeks	206	51.8	51.8	51.8
	Did not experience fever in the last 2 weeks	192	48.2	48.2	100.0
	Total	398	100.0	100.0	
Diarrhoea	Experienced diarrhoea in the last 2 weeks	198	49.7	49.7	49.7
	Did not experience diarrhoea in the last 2 weeks	200	50.3	50.3	100.0
	Total	398	100.0	100.0	
Malaria	Experienced symptoms of malaria in the last 2 weeks	188	47.2	47.2	47.2
	Did not experience any symptoms of malaria in the last 2 weeks	210	52.8	52.8	100.0
	Total	398	100.0	100.0	

The study evaluated the uptake of management of diarrhoea and malaria in the community and found that 31% of households consulted CHVs when their child felt unwell. The results are summarised in table 4.3.

Table 4.3: Caregivers Consulting CHVs when their Children are Unwell

	Frequency	Percent	Valid Percent	Cumulative Percent
Did you consult a CHV when your child was sick?				
Yes	124	31.2	31.2	31.2
No	274	68.8	68.8	100.0
Total	398	100.0	100.0	
Did the CHV diagnose your child and referred you to hospital?				
Yes	169	42.5	42.5	42.5
No	229	57.5	57.5	100.0
Total	398	100.0	100.0	
Did the CHV refer you to hospital without attempting to diagnose your child?				
Yes	158	39.7	39.7	39.7
No	240	60.3	60.3	100.0
Total	398	100.0	100.0	
Did the CHV give you a prescription to buy drugs?				
Yes	125	31.4	31.4	31.4
No	273	68.6	68.6	100.0
Total	398	100.0	100.0	

4.2 Specific Objective 1: To Determine the Uptake of Interventions Offered by CHVs in Prevention and Basic Management of Malaria in Children in Kisumu West Sub County

The first objective investigated the uptake of the interventions offered by CHVs in the prevention and basic management of malaria in children. Of the 188 children who had experienced symptoms of malaria in the previous two weeks, 123 (72.3) % received drugs from CHVs. There was statistical association between household visits and uptake of malaria prevention services provided by CHVs including provision of mosquito nets (chi square value 120.532, df =1; $p =0.001$), spraying house against mosquitoes (chi square value 79.755, df =1; $p =0.001$), draining stagnant water around houses (chi square value 99.628, df =1; $p =0.001$), clearing bushes around houses (chi square value 75.267, df =1; $p =0.001$), provision of malaria drugs (chi square value 79.708, df =1; $p =0.001$). The results are presented on Table 4.4.

Table 4.4: Association between CHVs and Uptake of Malaria Control Interventions Measures among Children Under Five Years in Kisumu West Sub County

Characteristics	Under Five Years old Diagnosed with malaria		Chi-square value (df)	df	p-value
	Yes n(%)	No n(%)			
Has the CHV ever given you a mosquito net?					
Yes	126(81.8)	28(18.2)	120.532	1	0.001
No	62(25.4)	182(74.6)			
Has the CHV ever sprayed your house against mosquitoes?					
Yes	138(69.7)	60(30.3)	79.755	1	0.001
No	50(25.0)	150(75.0)			
Has the CHV ever asked you to drain stagnant pool of water around your house?					
Yes	156(69.0)	70(31.0)	99.628	1	0.001
No	32(18.6)	140(81.4)			
Has the CHV ever asked you to clear the bush around your home?					
Yes	150(66.1)	77(33.9)	75.267	1	0.001
No	38(22.2)	133(77.8)			
Did CHV diagnose you with malaria and gave necessary drugs?					
Yes	123(72.8)	(46(27.2)	79.708	1	0.001
No	65(28.4)	164(71.6)			

Binary logistic regression analysis on the statistically significant chi square findings (only those variables which showed statistical significance levels at chi square analysis) reported a significant association on the distribution of mosquito nets (OR=0.174, 95%CI =0.097-0.311, $p=0.001$) indicating that those who were diagnosed with malaria were less likely to have been given an ITN, drainage of pools (OR=0.212, 95%CI =0.053-0.853, $p =0.029$) and malaria diagnosis and drugs given (OR=6.68, 95%CI =4.327-10.519, $p =0.001$). The results are presented on Table 4.5.

Table 4.5: Association between CHVs and Uptake of Malaria Control Interventions among Children Under Five Years in Kisumu West Sub County

Characteristics	Diagnosed with malaria		OR	95%CI	p-value
	Yes n(%)	No n(%)			
Has the CHV ever given you a mosquito net?					
Yes	126(81.8)	28(18.2)	Ref.		
No	62(25.4)	182(74.6)	0.174	0.097-0.311	0.001***
Has the CHV ever sprayed your house against mosquitoes?					
Yes	138(69.7)	60(30.3)	Ref.		
No	50(25.0)	150(75.0)	0.909	0.352-2.348	0.844
Has the CHV ever asked you to drain stagnant pool of water around your house?					
Yes	156(69.0)	70(31.0)	Ref.		
No	32(18.6)	140(81.4)	0.212	0.053-0.853	0.029*
Has the CHV ever asked you to clear the bush around your home?					
Yes	150(66.1)	77(33.9)	Ref.		
No	38(22.2)	133(77.8)	1.804	0.524-6.210	0.349
Did the CHV diagnose you with malaria and gave necessary drugs?					
Yes	123(72.8)	(46(27.2)	Ref.		
No	65(28.4)	164(71.6)	6.476	4.327-10.519	0.001***

OR = odds ratio, Ref. = reference category, * = statistically significant value, *** very highly significant

4.2.1 To Determine the Uptake of Interventions Offered by CHVs in Prevention and Basic Management of Diarrhoea in children in Kisumu West Sub County

The second objective of this study investigated the uptake of interventions offered by CHVs in the prevention and basic management of diarrhoea in children. Of the 198 children who experienced symptoms of diarrhoea in the two weeks prior to the survey, 89 (44.9%) received the ORS sachets from the CHVs, 105 were referred to a health centre for management while 28 were asked to purchase from a pharmacy. Various intervention measures were associated with diarrhoea prevention services uptake in the households which were visited by the CHVs in Kisumu west Sub County. These included communication on how to give fluids to the child (chi square value 81.521, $df = 1$; $p = 0.001$), give the child ORS (chi square value 74.702, $df = 1$; $p = 0.001$), taught how to prepare solutions (chi square value 59.420, $df = 1$; $p = 0.001$), advised how to treat drinking water (chi square value 17.913, $df = 1$; $p = 0.001$), advised the caregiver on effective hand washing techniques (chi square value 11.761, $df = 1$; $p = 0.001$), advised caregiver to put tap next to latrine (chi square value 5.582, $df = 1$; $p = 0.048$). There was no statistical association between other diarrhea prevention measures with occurrence of diarrhea in households such as; household having a latrine; chi square value 1.384, $df = 1$; $p = 0.239$), washed hands with soap before eating; chi square value 3.965, $df = 1$; $p = 0.183$), washed hands with soap and water after attending to defecation; (chi square value 1.103, $df = 1$; $p = 0.497$) and washing hands with soap and water before feeding a child (chi square value 3.053, $df = 1$; $p = 0.122$). The results are provided in Table 4.6.

Table 4.6: Intervention Measures Associated with Diarrhoea Prevention

Characteristics	Diagnosed with diarrhea		Chi-square value (df)	df	p-value
	Yes n(%)	No n(%)			
Did the CHV ask you to give fluids to the child?					
Yes	95(86.4)	15(13.6)	81.521	1	0.001*
No	103(35.8)	185(64.2)			
Did the CHV give your child ORS?					
Yes	89(86.4)	14(13.6)			
No	109(36.9)	186(63.1)	74.702	1	0.001*
Did CHV undertake you through preparation of solution?					
Yes	103(76.9)	31(23.1)	59.420	1	0.001*
No	95(36.0)	169(64.0)			
Did CHV advise you on how to treat drinking water?					
Yes	128(59.5)	87(40.5)	17.913	1	0.001*
No	70(38.3)	113(61.7)			
Has CHV advised you on effective handwashing techniques?					
Yes	154(55.4)	124(44.6)	11.761	1	0.001*
No	44(36.7)	76(63.3)			
Does the household have a latrine?					
Yes	183(50.7)	178(49.3)	1.384	1	0.239
No	198(49.7)	200(50.3)			
Has the CHV ever advised you to put a tap next to a latrine?					
Yes	157(53.0)	139(47.0)	5.582	1	0.048*
No	41(40.6)	60(59.4)			
Did you wash hands with soap before eating?					
Yes	195(50.1)	194(49.9)	3.965	1	0.183
No	3(40.0)	6(60.0)			
Did you wash your hands with water and soap after attending to defecation?					
Yes	195(49.4)	200(50.6)			
No	3(100.0)	0(0.0)	3.053	1	0.122
Did you wash your hands with soap and water before preparing food?					
Yes	197(49.6)	200(50.4)			
No	1(100.0)	0(0.0)	1.013	1	0.497
Did you wash your hands with soap and water before feeding a child?					
Yes	195(49.4)	200(50.6)	3.053	1	0.122
No	3(100.0)	0(0.0)			

Binary logistic regression analysis on the statistically significant chi square findings reported a significant association on giving fluids to children (OR=0.249 95%CI =0.078-0.794, $p =0.019$), taken through preparation of fluids (OR=0.348, 95%CI =0.200-0.605, $p =0.001$). Although taking through the caregiver on how prepare ORS did not show statistical significance, those whom the CHVs did not take through the preparation of ORS were more than twice as likely to be diagnosed of diarrhoea than those who were taught how to prepare ORS. There were no statistical associations with rest of the intervention measures or practices including advise on how to treat drinking water (OR=0.510, 95%CI =0.314-0.827, $p =0.060$),

advise on hand washing techniques (OR=0.736, 95%CI =0.420-1.291, $p =0.285$) and advised CHV to put tap next to latrine (OR=0.893, 95%CI =0.411-1.41, $p =0.335$). The results are presented on Table 4.7

Table 4.7: Association between CHVs and Uptake of Diarrhoea Prevention Measures among Children

Characteristics	Diagnosed with diarrhea		OR	95%CI	p-value
	Yes n(%)	No n(%)			
Did the CHV ask you to give fluids to the child?					
Yes	95(86.4)	15(13.6)	Ref.		
No	103(35.8)	185(64.2)	0.249	0.078-0.794	0.019*
Did the CHV teach you how to prepare ORS?					
Yes	89(86.4)	14(13.6)	Ref.		
No	109(36.9)	186(63.1)	2.722	0.663-11.171	0.165
Did CHV undertake you through preparation of fluids?					
Yes	103(76.9)	31(23.1)	Ref.		
No	95(36.0)	169(64.0)	0.348	0.200-0.605	0.001*
Did CHV advise you on how to treat drinking water?					
Yes	128(59.5)	87(40.5)	Ref.		
No	70(38.3)	113(61.7)	0.510	0.314-0.827	0.060
Has CHV advised you on effective hand washing techniques?					
Yes	154(55.4)	124(44.6)	Ref.		
No	44(36.7)	76(63.3)	0.736	0.420-1.291	0.285
Has the CHV ever advised you to put a tap next to a latrine?					
Yes	157(53.0)	139(47.0)	Ref.		
No	41(40.6)	60(59.4)	0.893	0.411-1.541	0.335

OR = odds ratio, Ref. = reference category, * = statistically significant value

4.3 Specific Objective 3: To Determine the Role of CHVs in Facilitating Community Dialogue and Action Days and the Influence of These in Promoting the Uptake of Interventions Against Malaria and Diarrhoea in Children in Kisumu West Sub County

Health education campaigns are expected to boost awareness of availability of preventive and promotive services to the communities, increased access and uptake of services disease prevention strategies. In this study majority, 358(89.9%) of caregivers reported that health education campaigns had been conducted in their communities for the last one year. These campaigns were about various disease prevention strategies as presented on Table 4.8.

Table 4.8: Health Education Campaign in Communities in Kisumu West Sub County

	Frequency	Percent	Valid Percent
Has a health campaign been done in this village in the past one year?			
Yes	358	89.9	89.9
No	40	10.1	10.1
Total	398	100.0	100.0
Was the campaign promoting benefits of breastfeeding?			
Yes	210	58.7	58.7
No	148	41.3	41.3
Total	358	100.0	100.0
Was the campaign promoting diarrheal diseases?			
Yes	216	60.3	60.3
No	142	39.7	39.7
Total	358	100.0	100.0
Was the campaign promoting vitamin A supplementation?			
Yes	228	63.7	63.7
No	130	36.3	36.3
Total	358	100.0	100.0
Was the campaign promoting sanitation?			
Yes	232	64.8	64.8
No	126	35.2	35.2
Total	358	100	100
Was the campaign promoting nutrition?			
Yes	193	53.9	53.9
No	165	46.1	46.1
Total	358	100	100
Was the campaign promoting immunization?			
Yes	347	96.9	96.9
No	11	3.1	3.1
Total	358	100	100

There was statistical difference between the participants who reported to have had health campaigns and those who did not and these included campaigns promoting breastfeeding (chi square value 3.834, df; 1, $p=0.050$); campaign promoting diarrhoea disease prevention (chi square value 7.704, df; 1, $p=0.006$), campaign promoting vitamin A supplementation (chi square value 14.651, df; 1, $p=0.001$); campaign promoting sanitation (chi square value 9.426, df; 1, $p=0.003$); campaign promoting nutrition (chi square value 12.034, df; 1, $p=0.001$); campaigns promoting immunization (chi square value 110, df; 1, $p=0.000$). All the assessed variables on childhood diseases prevention strategies were reported to show statistical difference with health education strategies using chi square test of association. The majority of those who reported to have had health education campaign indicated that the campaigns were largely on immunization (96.9%) in proportion to the other health education campaign themes. The results are presented on Table 4.9.

Table 4.9: Association between Health Campaign and Uptake of Promotion of Health Interventions

	Frequency	Percent	Valid Percent	Chi square	<i>p</i> -value
Has a health campaign been done in this village in the past one year?					
Yes	358	89.9	89.9		
No	40	10.1	10.1		
Total	398	100.0	100.0		
Was the campaign promoting benefits of breastfeeding?					
Yes	210	58.7	58.7		
No	148	41.3	41.3	3.834	0.063
Total	358	100.0	100.0		
Was the campaign promoting diarrheal diseases prevention?					
Yes	216	60.3	60.3		
No	142	39.7	39.7	7.704	0.007***
Total	358	100.0	100.0		
Was the campaign promoting vitamin A supplementation?					
Yes	228	63.7	63.7		
No	130	36.3	36.3	14.651	0.001***
Total	358	100.0	100.0		
Was the campaign promoting sanitation?					
Yes	232	64.8	64.8		
No	126	35.2	35.2	9.426	0.003***
Total	358	100	100		
Was the campaign promoting nutrition?					
Yes	193	53.9	53.9		
No	165	46.1	46.1	12.034	0.001***
Total	358	100	100		
Was the campaign promoting immunization?					
Yes	347	96.9	96.9		
No	11	3.1	3.1	110.319	0.000***
Total	358	100	100		

Df =degrees of freedom; *=statistical significance; ** =highly significant level; *** =very highly significant

However, when the variables which showed statistical differences were loaded onto a regression model to measure the strength of the association and to show where the relationship lies, only campaign prompting immunization was statistically significant with the community where health education campaigns were not reported were very less likely to promote immunization; OR 0.33; 95%CI 0.012-0.089; $p = 0.001$. The rest of the categorical variables in chi square were not significant by logistical regression model (binary logistical regression). Although having had campaign to promote diarrheal disease control was not statistically associated with prevention of malaria, there was a trend showing that the promotion encouraged measures of controlling diarrhea among under five years in Kisumu West Sub County (OR; 1.618, 95%CI 0.555-4.717, $p = 0.378$). The results are presented on Table 4.10.

Table 4.10: Association between Health Campaigns and Uptake of Health Promotion Interventions

Characteristics	Health campaign conducted in the last one year		OR	95%CI	p-value
	YES	NO			
Promoting breastfeeding					
Yes	210(92.5)	17(7.5)	Ref.		
No	148(86.5)	23(13.5)	1.196	0.432-3.307	0.731
Promoting diarrheal disease control					
Yes	216(93.5)	15(6.5)	Ref.		
No	142(85.0)	25(15.0)	1.618	0.555-4.717	0.378
Promoting vitamin A					
Yes	228(94.6)	13(5.4)	Ref.		
No	130(82.8)	27(17.2)	0.907	0.272-3.018	0.873
Promoting nutrition					
Yes	193(95.1)	10(4.9)	Ref.		
No	165(84.6)	30(15.4)	0.621	0.168-2.292	0.474
Promoting immunization					
Yes	347(94.6)	20(5.4)	Ref.		
No	11(35.5)	20(64.5)	0.33	0.012-0.089	0.001*
Promoting sanitation					
Yes	232(93.5)	16(6.5)	Ref.		
No	126(84.0)	24(16.0)	0.515	0.180-1.469	0.215

OR = odds ratio, Ref. = reference category, * = statistically significant value

4.4 Qualitative Study

In order to triangulate quantitative data, key informants' questionnaire was administered to community health assistants. They ascertained that in the community health units which they are in charge of, the CHVs routinely participated in community dialogues and community action days. Some of the roles which were associated with CHVs during community dialogue days include provision of data to drive the discussion during dialogue days. 'The data they collect makes it possible for us to identify the areas which need improvement and communicate these during the dialogue days,' said one CHA. The CHVs also played a pivotal role in ensuring community members attended dialogue and action days as well as making follow ups to ensure agreed upon action were undertaken. "Since they are opinion shapers in the community, when they inform the community members to attend an event, they are taken seriously, said another CHA". Another role which was attributable to CHVs by the CHAs was health promotion. "Since they are familiar with the members of the community, whenever we organise activities which involve children or pregnant women such as immunisation, they make an effort to direct us to the right households since they want their data to look good. This promotes the uptake of health services," said a CHA. The roles which

the CHAs attributed to CHVs which were associated with community dialogue days include the raising of awareness of health and other community development related issues as well as the use of the occasion to strengthen community- facility linkage. The CHAs cited a number of challenges they experienced working with the CHVs. One said “when this program began, the CHV kit was supposed to be filled regularly, however, there are time even the hospital itself does not have the drugs. This forces many cases which can be managed at the community to be referred to the facility”. The same CHA added, “clients, once they receive a diagnosis may prefer to purchase the drug as opposed to spending time and money to travel to a health facility”

CHAPTER FIVE

DISCUSSION

5.1 Demographics

The study found that 7.3% of the caregivers were below 18 years. The 2022 population census report found that , nationally, 12% of adolescent girls had had at least one live birth while in Kisumu County, the rate was 9% (KNBS, 2023).A majority of the caregivers were between the ages of 19 and 23. 47% of the respondents reported being unemployed while 72% of the caregivers had primary education or less. While lack of employment may not be an absolute indicator of family income, it can be used as a proxy indicator. Studies have found that women with no education or primary level of education report a higher fertility risk and cite distance to a facility as a deterrent to accessing healthcare (Mbugua & MacQuarrie, 2018). The uptake of services related to the illness of a child was varied with 31.2% consulting the CHV when they child felt unwell. CHVs referred 42.5% of the cases to a hospital for further care, 39.7% did not receive a diagnosis from a CHV and 31.4% were asked to purchase drugs from a pharmacy.

5.2 Specific Objective 1: To Determine the Uptake of Interventions offered by CHVs in Prevention and Basic Management of Malaria in Children in Kisumu West Sub County

Caregivers can consult CHVs when children are ill. They offer diagnostic and referral services to the nearest health facility when necessary. The study found out that CHVs were consulted by 31.2% of the caregivers when their child had symptoms of an illness. Other studies have varying levels first time consultation when the child is unwell; The end line assessment of the an ICCM pilot in Siaya, a neighbouring county found the uptake equal at 31.1% (Kabue Mark, Otieno Dan, Shiroya-Wandabwa Makeba, Subramanian Savitha, Tsuma Laban, 2016)A study conducted in Asembo and Kibera found the rate of consultation of CHVs by caregivers 9% and 7% respectively(Olson et al., 2011). A study conducted in Uganda after the institution of the integrated community case management of childhood illnesses found the utilisation rate at 27% (Gerald & Caroline, 2015).A high utilisation of CHVs in the study could be an indication of both trust and availability as well as the cost free nature for the consultation services.(Kisia et al., 2012) found that lower income families were likely to consult CHVs compared with their higher income counterparts. Distance from a facility and lack of money is a barrier to hospital visits and an incentive to the use of CHVs (Kabue Mark, Otieno Dan, Shiroya-Wandabwa Makeba, Subramanian Savitha, Tsuma Laban, 2016)

The services provided by CHVs in the prevention and management of malaria can be broadly categorised into three; provision of information (draining stagnant water around houses, clearing of bushes around houses), provision of goods and services (provision of mosquito nets, IDR) and diagnostic and curative services (provision of malaria drugs). The study found a statistical association between household visits and uptake of malaria prevention services provided by CHVs including provision of mosquito nets, spraying house against mosquitoes, draining stagnant water around houses, the clearing of bushes around houses. and provision of malaria drugs. CHVs have been found to improve access to diagnosis and treatment of malaria by symptomatically diagnosing malaria by monitoring fever, giving artemether-lumefantrine, the fixed dose recommended drug for uncomplicated malaria, and referral of all cases of complicated fever (Siekman *et al.*, 2013).

Of the 398 households sampled for malaria prevention and management, 154 (38.6%) received mosquito nets from CHVs, 198 (49.7%) had IDR from CHVs, 226(56.7%) were guided to drain stagnant pools of water by CHVs and 57% were guided to clear bushes around the household by the CHVs. The goal of community health was to promote the access to promotive, preventative, rehabilitative and curative health services (Kenya Community Health strategy, 2020). While IDR and mosquito nets do not necessarily need to be accessed via CHVs, the CHV basic training module anticipates that households covered will be trained on the need to undertake environmental activities which help in preventing malaria (Ministry of Public Health and Sanitation, 2013). The incomplete coverage of all the possible range of services by CHVs is a gap which needs to be redressed if community health strategy is to achieve its potential (Ministry of Health Government of Kenya, 2020).

Binary logistic regression analysis on the statistically significant chi square findings reported a significant association on the distribution of mosquito nets, indicating that those who were diagnosed with malaria were less likely to have been given an ITN, drainage of pools, and malaria diagnosis and drugs given. The WHO, in a position paper, encouraged a dual approach to the distribution of mosquito nets combining the provision of the nets in the facility in the ante natal and post-natal clinics with monthly outreaches and child health days or weeks (Carnevale & Gay, 2019). The use of the latter approach is suitable for CHVs who are conversant with the needs of the households they serve. Mosquito net coverage in the area is high and therefore it cannot be assumed that the households which did not receive mosquito nets from CHVs did not have any or sufficient mosquito nets. A similar conclusion was reached by Ng'ng'a and others, who posited that it is important to investigate other

factors such as consistency of use and outdoor inoculation (Ng'ang'a *et al.*, 2021). The ability of CHVs to diagnose malaria and provide medication will enhance access to timely management of malaria which is a major aim of IMCI, the strategy recommended by the WHO in order to improve family and community practices as well as the ability of primary hub facilities in the management of important childhood illnesses (WHO & UNICEF, 2000). This will lead to a reduction of malaria cases handled in the health facilities, time and money spent in caring for sick children and a reduction in cases which progress to complicated malaria due to late diagnosis.

5.3 Specific Objective 2: To Determine the Uptake of Interventions offered by CHVs in Prevention and Basic Management of Diarrhoea in Children in Kisumu West Sub County

Various intervention measures were associated with diarrhoea prevention services uptake in the households which were visited by the CHVs in Kisumu west Sub County. These included communication on how to give fluids to the child, give the child ORS, taught how to prepare solutions, advised how to treat drinking water, advised the caregiver on effective hand washing techniques, advised caregiver to put tap next to latrine. There was no statistical association between other diarrhoea prevention measures with occurrence of diarrhoea in households such as; household having a latrine, washing hands with soap before eating; washing hands with soap and water after attending to defecation; and washing hands with soap and water before feeding a child.

In this study, 31% of the caregivers consulted CHVs when their child ill. An end line assessment for an IMCI pilot in Bondo sub county, Siaya County found that the caregivers' consultation of CHV when children experienced diarrhoea ranged between 16% to 27% in different community units (CU) at the end of the project. The same study found that the proportion of children treated with both ORS and zinc tablets at the end of the study ranged between (53%) and (63%) in the different CUs. (Kabue Mark, Otieno Dan, Shiroya-Wandabwa Makeba, Subramanian Savitha, Tsuma Laban, 2016) compared to this study where 89 (44.9%) received ORS from CHVs. The finding that caregivers were guided on the preparation of ORS, the provision of additional fluids to children who were experiencing diarrhoea and the preparation of ORS by CHVs is in sync with the guidelines and likely to improve the outcomes of children who are suffering from diarrhoea since timely access to ORS has been shown to reduce diarrhoea associated mortality by 93% (GOK, 2014).

Effective hand washing, and consistent treatment of drinking water can also reduce the incidence of diarrhoea in children. The national guidelines on the prevention and management of diarrhoea make similar recommendations in the community prevention component of the guidelines (GOK, 2014). Interpersonal communication by CHVs through home visits has been demonstrated to improve the point of use water treatment (Chankova *et al.*, 2012), however this may be dependent on availability and affordability of the treatment method. The study did not find any association between the visits by CHVs and the presence of latrines as well as hand washing with soap and water at key moments in children with diarrhoea. Studies indicate that CHVs have been found to improve the uptake of hand washing at key moments by providing the necessary knowledge, however, the availability of sufficient quantity of water, hand washing facilities, and soap are an important predictor to the uptake of this behaviour (Abebe *et al.*, 2023). Consequently, community strategy may provide the knowledge necessary but may not influence behaviour if the supplies necessary are not available.

The proportion of children who had experienced diarrhoea within two weeks prior to the survey was reported as 50%. This is higher than a study conducted in Bandani, Kisumu which had a reported prevalence of 40% (Rakewa, 2022). The proportion of households in Kisumu West Sub County which use unimproved sources of water however is 50% as compared to 40% in Kisumu East where Bandani is located. The difference in access to improved sources of water could explain the difference in the prevalence of diarrhoea as well as the high prevalence of diarrhoea in children.

Statistically significant associations were found with regards to the provision of additional fluids to children during episodes of diarrhoea and taking the caregivers through preparation of fluids. Although taking through the caregiver on how prepare ORS did not show statistical significance, those whom the CHVs did not take through the preparation of ORS were more than twice as likely to be diagnosed of diarrhea than those who were taught how to prepare ORS. There was no statistical associations with rest of the intervention measures or practices including advise on how to treat drinking water, advise on hand washing techniques, and advise by a CHV to put tap next to latrine.

From a policy implementation perspective, it can be concluded that CHVs can provide the knowledge necessary for management of diarrhoea episodes in homes, and promote the uptake of key prevention measures against diarrhoea in children, however, their influence on

behaviours of members of the community is not uniform and as such they most effective in the management component as opposed to the prevention component of diarrhoea in children. Access to and affordability of ORS will determine if the knowledge is put into practice or not. Cost has been identified to be a barrier in the uptake of sanitation (Akter & Ali, 2014).

5.4 Specific Objective 3: To Determine the Role of CHVs in Facilitating Community Dialogue and Action Days and the Influence of These in Promoting the Uptake of Interventions Against Malaria and Diarrhoea in Children in Kisumu West Sub County

The third objective examined the use of community action and dialogue days by CHVs to impart knowledge and improve the uptake of healthy practices in the community. In this study majority, 358(89.9%) of caregivers reported that health education campaigns had been conducted in their communities for the last one year. There was statistical difference between the participants who reported to have had health campaigns and those who did not and these included campaigns promoting breastfeeding, diarrhoea disease prevention, vitamin A supplementation, sanitation, child nutrition, and immunization. All the assessed variables on childhood diseases prevention strategies were reported to show statistical difference with health education strategies using chi square test of association. The majority of those who reported to have had health education campaign indicated that the campaigns were largely on immunization (96.9%) in proportion to the other health education campaign themes. This could be a consequence of the repeated measles and polio campaigns which necessarily took place in the community and had an element of galvanisation to ensure attendance. It is also possible that these campaigns were easier to recall since multiple channels were used to disseminate the information.

Although having had campaign to promote diarrheal disease control was not statistically associated with prevention of diarrhoea, there was a trend showing that the promotion encouraged measures of controlling diarrhoea among under five years in Kisumu West Sub County. CHVs mobilised the community both during household visits and during dialogue days to undertake activities which improve the health of children. CHVs have been found to be essential in mobilising communities to attend integrated outreaches organised through a hub facility (TCI University, 2014)

CHAs acknowledged that CHVs which were associated with community dialogue days by raising of awareness of health and other community development related issues as well as the use of the occasion to strengthen community- facility linkage. A study conducted to

strengthen the uptake of integrated community management of childhood illnesses in Africa found community dialogue an appropriate avenue for the provision of information and generating acceptance (Martin *et al.*, 2017). Community dialogue can also be an effective avenue for creating confidence and providing reassurance to members of the community (Lewis *et al.*, 2020). CHVs, being members of the community and selected by the community are likely to engender trust and as such effectively raise awareness and provide effective referrals. They thus act as an effective interface between the vertical health system and the horizontal community interventions.

CHVs collect and summarise the information which is discussed during community dialogue days. The information is expected to stimulate dialogue and inform collective decisions and inspire change in the community (Ministry of Health - Kenya, 2013). This further reinforces participation and ownership by the community which is essential in implementing changes.

Communities with an objective understanding of their health situation are more likely to take part in developing preventive actions. Furthermore, in order for health education to be effective, the narration of facts and the way forward may not be adequate, rather, the education is best disseminated when woven in the fabric of the daily activities of the community (Oakley, 1989). The study found that CHVs fostered the involvement of the community by collecting the data which fosters the dialogue in community dialogue days, galvanise participation and identifying the households which require health interventions. The role of the CHV as a trusted member of the community fosters information sharing which is key in identifying issues in dialogue days and action of community action days. The failure or success of a household in carrying out the advice provided by the CHVs is determined by the follow up done by the CHV, the resource availability of the household, follow up by government officials and even the education levels of the caregiver.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 To Determine the Uptake of Interventions offered by CHVs in Prevention and Basic Management of Malaria in Children in Kisumu West Sub County

The study found that 31% of caregivers consulted CHVs when their children had symptoms of an illness. The CHVs were also found to be effective in the distribution of mosquito nets, guiding households on the drainage of pools of stagnant water around homes and malaria diagnosis and provision of drugs. 72.3% of the cases who were identified received AL from the CHV.

6.2 To Determine the Uptake of Interventions offered by CHVs in Prevention and Basic Management of Diarrhea in Children in Kisumu West Sub County

In the prevention and management of diarrhoea in children, the study found that CHVs were particularly effective in advising caregivers to give additional fluids in cases of diarrhoea and preparation of ORS. 44.9 of the children who had diarrhoea received ORS from CHVs. Measures associated with sanitation and hygiene were not found to be as effective and as such there is a need to ensure that training and supervision are conducted to ensure the CHVs are equally effective in this area.

6.3 To Determine the Role of CHVs in Facilitating Community Dialogue and Action Days and the Influence of these in Promoting the Uptake of Interventions Against Malaria and Diarrhea in Children in Kisumu West Sub County

CHAs acknowledged the role of CHVs played in gathering household data which was used in giving feedback to the community, and unearthing the health issues the community needed to tackle. They also mobilised members of the community to attend the dialogue days. Immunization campaigns were the ones most associated with CHV outreaches, possibly because they occurred most often. Given that malaria and diarrhoea remain major sources of morbidity and mortality, there needs to be a consistent timetable to ensure the topics are tackled.

6.4. Recommendations From the Study

- i. The study recommends that the replenishment of artemether/Lumefantrine in the CHV kits be done in a timely manner to avoid service gaps.
- ii. Additional training and supervision of CHVs to make them effective in influencing the sanitation measures required to reduce the transmission of diarrhoea.

- iii. Additional campaigns to ensure the recall of Malaria and diarrhoea campaigns match the levels of immunization campaigns.

6.5 Recommendations for Future Studies

The study recommends future research in order to determine the determinants of the uptake of preventive and curative health services from CHVs as well as the factors which impede the uptake of health messages on sanitation from CHVs in order to improve uptake, outcome and impact of investment in CHV and primary healthcare.

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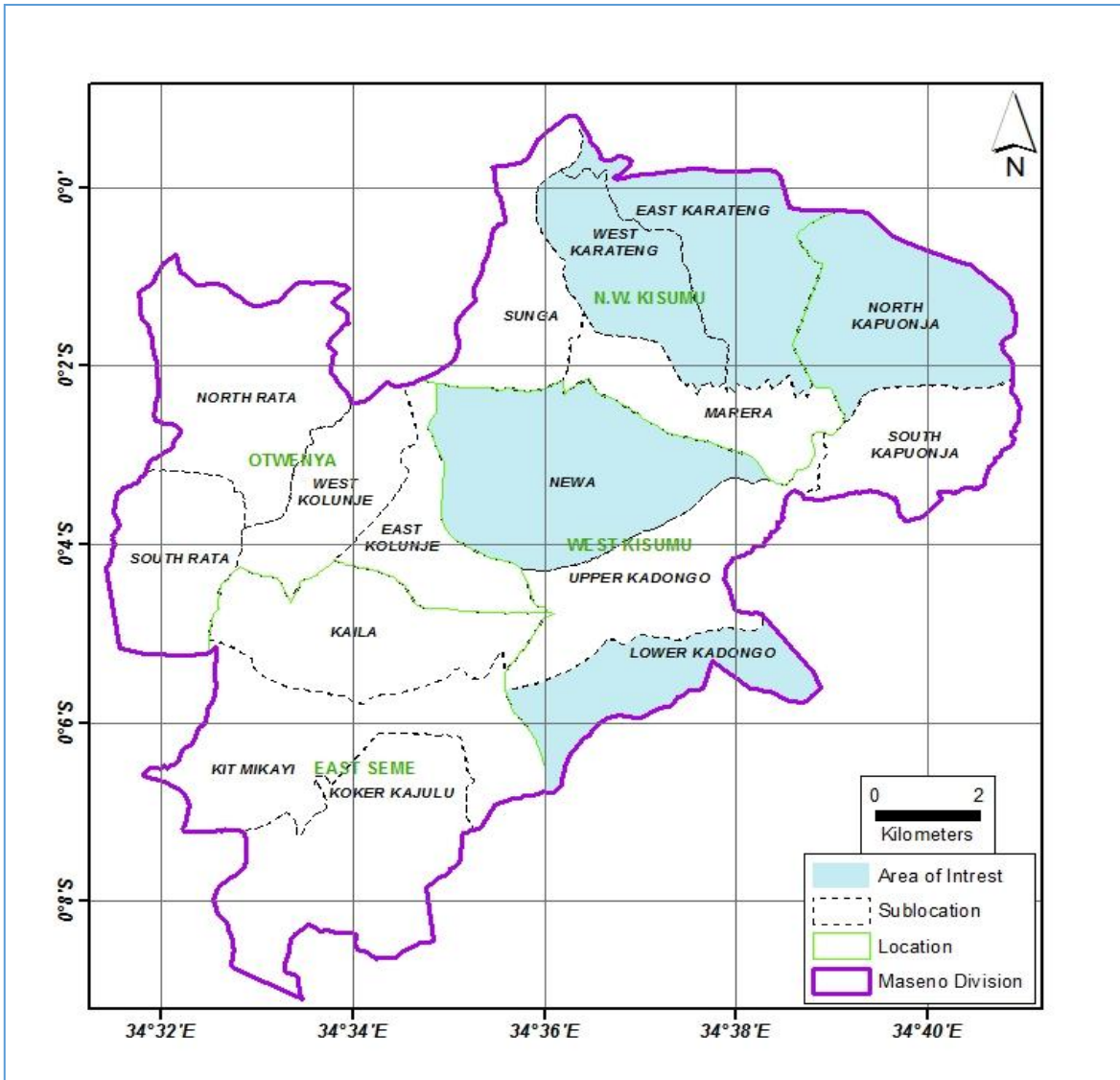
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APPENDICES

Appendix 1: Map of Study Site



Appendix 2: Household Questionnaire

Questionnaire No:.....

QUESTIONNAIRE FOR: ASSESSING THE ROLE OF COMMUNITY HEALTH VOLUNTEERS IN IMPROVING THE HEALTH OF CHILDREN AGED 5 YEARS AND BELOW IN KISUMU WEST SUB COUNTY, KISUMU COUNTY, KENYA.

DATE OF INTERVIEW.....

NAME OF THE RESEARCH ASSISTANT.....

INFORMED CONSENT

Greeting. My name is _____ and I work with _____ for Benard Otieno of Maseno Univesity School of Public Health and Community Development. We are conducting a survey about maternal and child health care in our communities. We would very much appreciate your participation in this survey. This information you provide will be used for education purposes and may also help to plan and improve health services. The interview will take not more than 45 minutes to complete.

I very much appreciate your participation in this survey. Whatever information you provide will be kept confidential and will not be shown to other persons.

Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this survey since your views are important.

At this time, do you want to ask me anything about the survey?

Do you agree to participate in this survey? YES NO

IF NO, MARK THIS HOUSE AS A REFUSAL IN THE TABLE FOR SEQUENCE OF HOUSEHOLDS VISITED AND GO TO THE NEXT HOUSE.

THANK YOU

Record the time the interview BEGINS	___ ___ : ___ ___	HOUR: MINUTE
--------------------------------------	-------------------	-----------------

No.	Questions and Filters	Coding Categories	Skips
SECTION 1: DEMOGRAPHIC FACTORS OF STUDY PARTICIPANTS			
101.	Age in completed years:.....		
102.	Gender of respondent.	1. Male	1
		2. Female	2
103.	What is your highest attained education level?	1. None	1
		2. Primary incomplete	2
		3. Primary incomplete	3
		4. Secondary incomplete	4

		5. Secondary complete	5	
		6. Tertiary	6	
		98. Others (Specify)	98	
104.	What is the highest attained education level of HHH?	1. None	1	
		2. Primary incomplete	2	
		3. Primary incomplete	3	
		4. Secondary incomplete	4	
		5. Secondary complete	5	
		6. Tertiary	6	
		98. Others (Specify)	98	
105.	Marital Status	1. Single, Never married	1	
		2. Windowed	2	
		3. Divorced	3	
		4. Separated	4	
		5. Widowed	5	
		98. Others (<i>please specify</i>):		
106.	What is the occupation of household head	1. Peasant (subsistence) farmer	1	
		2. Pastoral/cattle keeper	2	
		3. Trader	3	
		4. Formal employment	4	
		98. Others (<i>Please specify</i>):	98	
107	What is the average yearly HH income			
108.	How many have been consistently staying in this household for the last three months	1. 1 - 2	1	
		2. 3 - 5	2	
		3. 6 and above	3	
SECTION 2: CHVs HH VISITS AND THEIR ROLE IN BASIC MANAGEMENT OF MALARIA, FEVER AND DIARRHOEA				
201	Do you have a child aged 5 years and below?	Yes	1	If Yes proceed to Q2
		No	2	If No terminate interview
202.	Please tell me the name and age of all the children you have given birth to who are less than 5 years old	Sr.	Name	Age (Yrs or Mths)
		1.		
		2.		
		3.		
		4.		
		5.		
203.	Are all the children	Yes	1	If Yes proceed to

	alive			Q5		
		No	2	If No Proceed to Q4		
204	Which of the Children you have mentioned above are dead?	Child No _____; _____; _____; _____; _____ (Record the serial number of all the dead children)			Proceed to Q5	
205	Did a CHV visit you while you were pregnant with x (please select the name of the youngest living child)	Yes	1		If Yes Proceed to Q6	
		No	2		If No Proceed to Q.....	
206	In which months of your pregnancy did the CHV visit you while you were pregnant with X? (Record 1 against each trimester to indicate visit, 2 to indicate no visit and 9 if the interviewee can't recall – please prompt)	Period of Pregnancy	Visit			If no visit was recorded, please skip to Q8
			Yes.. 1	No... 2	IDK.. 9	
		Month 1 - 3				
		Month 4 - 6				
		Month 7 - 9				
207	What information did the CHV pass on to you during your pregnancy with x (please select the name of the youngest living child) (Record 1 against all mentioned and 2 for any not mentioned – Do not prompt)	Srl No.	Activity	Yes	No	Proceed to Q8
		207-1.	Promote 4+ ANC visits			
		207-2.	Draw up a birth plan			
		207-3.	Encourage skilled birth attendance			
		207-4.	Educate on exclusive breastfeeding			
		207-5	Promote savings for hospital based delivery			
		207-6. Others (specify)				
208	Where did you give birth	1. Medical Facility	1		Proceed to Q209	
		2. Home	2			
209	Who assisted you at birth	3. TBA	3		Proceed to Q210	
		4. CHV	4			

		5. Midwife		5	
		6. Nurse		6	
		7. Doctor		7	
210	Did a CHV visit you once you gave birth	Yes		1	If the response is NO, please proceed to Q213 otherwise proceed to Q211
		No		2	
211	How many times did the CHV visit you during the first week after you gave birth	1.Never		1	Proceed to Q212
		2. Once		2	
		3. Twice		3	
		4. Thrice		4	
		5. More than Thrice		5	
212	How soon after birth did the CHV visit you?	1. Within a day		1	Proceed to Q213
		2. Within a week		2	
		3. Within a month		3	
		4. After 1 month		4	
213	Have you ever consulted a CHV when child x is ill (<i>please select the name of the youngest living child</i>)	1. Yes	1	1	Proceed to Q214
		2. No	2	2	
214.	What actions did the CHV take? (<i>Mentioned.....1 Not mentioned.....2</i>)	1. Diagnosed the disease and gave me the necessary drugs	1. Yes....1	2. No....2	Proceed to Q215
		2. Diagnosed the disease and referred the child to the hospital for treatment			
		3. Referred the child to the health facility without attempting a diagnosis			
		4. Did nothing			
215.	Has a CHV diagnosed x with any of the following conditions	1. Fever	Yes.....1	No....2	Proceed to Q216
		2. Diarrhea			
		3. Malaria			
216	When your child was diagnosed ill, which of the following actions did the CHV ask you to take (<i>Tick 1 for</i>	Gave you drugs to treat the Child	Yes.....1	No....2	Proceed to Q217
		Gave you a prescription and asked you to buy drugs			
		Asked you to continue feeding the child and give fluids			
		Taught you how to prepare ORS			

	<i>all mentioned, Tick 2 for those not mentioned. Do not prompt)</i>	Asked you to give the child ORS			
		Asked you to take your child to the hospital			
		The CHV took no action			
		The CHV took no action			
		98. Others (Specify):			
217	Has a CHV ever asked you to undertake any of these activities or given you any of these products? (Tick 1 against all mentioned, please prompt)		1. Mentioned	2. Not Mentioned	Proceed to Q218
		1. Taught you how to prepare the ORS solution?			
		2. Given you a mosquito Net			
		3. Sprayed your house against Mosquitoes			
		4. Asked you to drain stagnant pools of water next to your house			
		5. Asked you to clear bushes next to your house			
218.	Has the CHV ever pointed out the conditions in which a child suffering from diarrhea ought to be taken to a health worker	1. Yes	1		Proceed to Q219
		2. No	2		
219	Please state some of the conditions in which a child suffering from diarrhea ought to be taken to a health worker		1. Mentioned	2. Not mentioned	Proceed to Q220
		1. The child is passing many watery stools			
		2. The child is repeatedly Vomiting			
		3. The child exhibits increased Thirst			
		4. The child is not eating or drinking normally			
		5. When there is blood in			

		the stool of the child			
		Others (<i>please specify:</i>)			
220	Has a CHV visited this household in the last one year?	Yes	1		Proceed to Q221
		No	2		
221	How often has the CHV visited this household?	1. Monthly			Proceed to Q222
		2. Once every three months			
		3. Once every 6 months			
		4. Once a year			
		5. IDK			
222	Has a health campaign been conducted in this village in last one year	1. Yes	1		Proceed to Q223
		2. No	2		
223	What was the health campaign promoting? Circle all mentioned (<i>Do not prompt</i>)		Mentioned	Not mentioned	
		Benefits of breastfeeding			
		Immunization			
		Diarrheal Disease control			
		Growth promotion /Nutrition			
		Vitamin A			
		Sanitation			
Others (<i>please specify:</i>)					
224	How did you learn about the health campaign? (Circle all mentioned; <i>Do not prompt</i>)	1. CHV			
		2. Media			
		3. Others (<i>please specify:</i>)			
SECTION 3: ROLE OF CHVS IN PROMOTING ACCESS TO WATER AND SANITATION HYGIENE					
301.	What is the source of water for members of your household? <i>Do not prompt. Circle number to right of response given.</i> Proceed to Q302	1. Piped water into dwelling			Proceed to Q302
		2. Piped water to yard/plot			
		3. Public tap/standpipe			
		4. Tube well/borehole			
		5. Protected dug well			
		6. Unprotected dug well			
		7. Protected spring			
		8. Unprotected spring			

		9. Rainwater collection in closed containers			
		10. Rainwater collection in open containers			
		11. Bottled water			
		12. Small-scale vendor			
		13. Tanker-truck			
		14. Surface water (river dam, lake, pond, stream, canal, irrigation channels)			
		15. Other (please specify):			
302.	Do you treat drinking water prior to drinking it	1. Yes	1	Proceed to Q303	
		2. No	2		
303.	Has the community health worker advised you on how to treat drinking water	1. Yes	1	Proceed to Q304	
		2. No	2		
		2. No	2		
304.	Which methods of treating water has the community health worker recommend to you?		Yes.....1	N0.....2	Proceed to Q 305
		1. Boiling drinking water			
		2. Chlorination			
		3. Filtering			
		4. Sedimentation			
305	Has the community health worker advised this household on effective Hand washing techniques?	1. Yes	1		Proceed to Q 306
		2. No	2		
306	Does this household have a toilet or a latrine	1. Yes	1		Proceed to Q 307
		2. No	2		
307	What kind of toilet facility does your household use? <i>Circle the number to the right of the appropriate response. If possible, validate by observation. If the toilet facility was seen, also place a tick beside the circled</i>	1. Flush toilet system			Proceed to Q308
		2. Uncovered latrine			
		3. Pipe ventilated latrine (covered)			
		4. Covered latrine			
		5. Uncovered latrine without an enclosed structure			
		6. Pipe ventilated latrine (uncovered)			
		7. No facilities/bush/field			

308	Does the CHV verify the presence of a toilet/ latrine during her visits	1. Yes	1	Proceed to 309	
		2. No	2		
309	Has the CHV ever advised you to place a tippy tap/leaky tins next to your latrine?	1. Yes	1	Proceed to 310	
		2. No	2		
310	How do you handle or dispose of children's' feces? <i>Do not prompt. Circle the number to the right of all responses given.</i>		1. Mentioned	2. Not Mentioned	Proceed to Q311
		1. Children always use the latrine			
		2. Child's feces are thrown outside yard			
		3. Child's feces are thrown into the latrine			
		4. Child's feces are buried in yard			
		5. Child's feces are not disposed of			
		6. Child's feces are thrown outside dwelling			
		Other (<i>specify</i>) 98 :			
311	On which occasions do you use soap when washing your hands? <i>Do not prompt. Tick responses</i>		1. Mentioned	2. Not Mentioned	Proceed to 312
		Before eating			
		After attending to the child who has defecated			
		After eating			
		Before preparing food			
		After visiting the toilet			
		Before feeding child			
		Others (<i>specify</i>):			
312.	On which occasions do you wash your hands without using soap? <i>Do not prompt. Circle number to right of all responses given.</i>		1. Mentioned	2. Not Mentioned	Proceed to 313
		Before eating			
		After attending to the child who has defecated			
		After eating			
		Before preparing food			
		After visiting the toilet			
		Before feeding child			

		Others (specify):			
313	Which of the occasions mentioned above did you learn from a CHV		1. Mentioned	2. Not Mentioned	Proceed to 314
		Before eating			
		After attending to the child who has defecated			
		After eating			
		Before preparing food			
		After visiting the toilet			
		Before feeding child			
		Others (specify):			
314	How do you dispose of garbage or other material waste? <i>Do not prompt. Circle the number to the right of all responses given.</i>		1. Mentioned	2. Not Mentioned	
		1. thrown into street or yard			
		2. taken to public dump			
		3. burned			
		4. collected			
		5. buried			
		6. thrown into waste disposal bin			
		98. Other (<i>specify</i>):			
SECTION 4: ROLE OF CHVS IN SUPPORTING EXCLUSIVE BREASTFEEDING, WEANING AND IMMUNIZATION UPTAKE AT THE HOUSEHOLD LEVEL.					
401.	Has the CHV advised you on the appropriate nutritional practices for children 0 to 5 years	1. Yes	1		Proceed to 402
		2. No	2		
402.	Please tell me some appropriate feeding practices for children aged 0 to 5 years that a CHV has taught you		1. Mentioned	2. Not mentioned	Proceed to 403
		early initiation of breastfeeding			
		exclusive breastfeeding for the first 6 months of life			
		continue frequent, on-demand breastfeeding until 2 years of age or beyond			
		start at 6 months with small amounts of food and			

		increase gradually as the child gets older			
		increase the number of times that the child is fed: 2-3 meals per day for infants 6-8 months of age and 3-4 meals per day for infants 9-23 months of age, with 1-2 additional snacks as required			
		during illness, increase fluid intake including more breastfeeding, and offer soft, favourite foods			
403.	Has (child's name) ever been Breastfed? Tick the number that applies.	1. Yes			Proceed to 404
		2. No			
		3. IDK			
404.	How soon after birth did you put (child's name) to breast?	Within 1 Hour of birth			Proceed to 405
		1. More than 1 hour after birth			
		3. IDK			
405	How soon after birth did you put (child's name) to breast?	1. Within 1 Hour of birth			Proceed to 406
		2. More than 1 hour after birth			
		3. IDK			
406.	Did you exclusively breast feed	1. Yes		1	Proceed to 407
		2. No		2	
407	Has the CHV ever administered a vaccine on your child?	1. Yes		1	Proceed to 408
		2. No		2	
409	Has a CHV ever reminded you to take your child for immunization at a health facility	1. Yes		1	The End
		2. No		2	

Appendix 3: Community Health Assistant (Key Informant interview) Guide

INFORMED CONSENT

Greeting. My name is _____ and I work with _____ for Bernard Otieno of Maseno University School of Public Health and Community Development. We are conducting a survey about maternal and child health care in our communities. We would very much appreciate your participation in this survey. This information you provide will be used for education purposes and may also help to plan and improve health services. The interview will take not more than 45 minutes to complete.

I very much appreciate your participation in this survey. Whatever information you provide will be kept confidential and will not be shown to other persons.

Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this survey since your views are important.

At this time, do you want to ask me anything about the survey?

Do you agree to participate in this survey? YES NO

THANK YOU

Record the time the interview BEGINS

___ ___ : ___ ___

HOUR:
MINUTE

301. In your role as a healthcare provider, how often do you engage with community health volunteers?

1. Weekly
2. Monthly
3. Quarterly
4. Semi Annually
5. Annually

302. What is your specific role in this regard?

- i.
- ii.
- iii.
- iv.

304. What is the current population of this sub-county? _____

305. How many households are in this sub county? _____

306. What is the average size of a household in this sub county _____
_____ people/per household

307. What is the recommended number of community units based on the population/ number of households in this sub-county? _____

308. How many community unit(s) are you in charge of? _____

309. Can you name the community units you are in charge of?

1. Unit 1-----
2. Unit 2-----
3. Unit 3-----
4. Unit 4-----

310. How many of these community units (CU) are functional? _____

(A functional CU has the following characteristics: monthly reporting, holding meetings as scheduled, have dialogue days, right number of CHVs, has a committee, supplies and tools available)

311. Are there CHVs in these units named in 302 above? (If no go to 311)

1. Yes ()
2. No ()

312. How many active CHVs are there in the units?

1. Unit 1-----
2. Unit 2-----
3. Unit 3-----
4. Unit 4-----

313. How long have the CHVs been deployed in the unit?

Months |_____| years |_____|

314. How many CHVs in the unit have attained the following levels of education

- i. Not completed primary education _____
- ii. Completed primary education _____
- iii. Completed secondary education _____
- iv. Completed tertiary education _____

315. Are the CHVs trained _____

1. Yes
2. No

316. Who trained the CHVs?

1. CHAs ()
96. Others(Specify)----- ()
98. I don't know ()

317. Which modules were the CHVs trained in? (tick all mentioned)

- | | | | |
|----------------------------------|-----|--|-----|
| i. Pre conception care | () | ii. Focused ante natal care | () |
| iii. Individual birth plans | () | ix. Use of ITN for mother and child | () |
| iv. Skilled birth attendance | () | x. Identification of nutrition related disease | () |
| v. Post Natal Care | () | in children | () |
| vi. New-born and the infant care | () | xi. Classification of nutrition related | () |
| vii. Exclusive breast feeding | () | disease in children | () |
| viii. Complementary feeding | () | | |

- xii. Referral of nutrition related disease in children ()
- xiii. Management of nutrition related disease in children ()
- xiv. Vitamin A supplementation ()
- xv. Deworming ()
- xvi. Handwashing procedure ()
- xvii. Critical handwashing moments ()
- xviii. Safe storage of drinking water ()
- xix. Appropriate treatment of drinking water ()
- xx. Proper disposal of faecal matter ()
- xxi. Prevention of malaria in children ()
- xxii. Identification of malaria signs and symptoms ()
- xxiii. Management of malaria in the community ()
- xxiv. Referral of malaria to the health facility ()
- xxv. Prevention of diarrhoea in children ()
- xxvi. Identification of diarrhoea signs and symptoms ()
- xxvii. Management of diarrhoea in the community ()
- xxviii. Referral of diarrhoea to the health facility ()
- xxix. Identification of fever in children ()
- xxx. Management of fever in the community ()
- xxxi. Referral of febrile children to the health facility ()
- xxxii. Immunisation for children ()
- xxxiii. Advocacy ()
- xxxiv. Community Dialogue ()

318. Do you conduct any of the following activities with the CHVs?

S/N	Activity	1. Yes	2. No
1.	Conduct monthly meeting		
2.	Plan activities together		
3.	Set and review targets		
4.	Provide supportive supervision		
5.	Participate in community action days		
96.	Others (specify)----- -----		

319. Does the CHV attend/organize health committee meetings?

- 1. Never ()
- 2. Once a year ()
- 3. Bi-annual ()
- 4. Quarterly ()
- 5. Monthly ()
- 6. As necessary ()

320.	Please rate the support you get from CHV for the following activities	None	Low	Moderate	High
1.	Immunization	1	2	3	4
2.	Child health/nutrition	1	2	3	4
3.	Essential neonatal care	1	2	3	4
4.	Diarrhea management	1	2	3	4
5.	Breast feeding practices	1	2	3	4
6.	Complementary feeding	1	2	3	4

7.	ANC visits	1	2	3	4
8.	Latrine construction and use	1	2	3	4
9.	Community mobilization	1	2	3	4
10.	Household visits	1	2	3	4
11.	Outreach services	1	2	3	4
12.	Identification of households without ITNS	1	2	3	4
13.	Distribution of ITNS	1	2	3	4

321. Do you conduct community dialogue meetings?

- 1. Never ()
- 2. Once a year ()
- 3. Bi-annual ()
- 4. Quarterly ()
- 5. Monthly ()
- 6. As necessary ()

322. Do CHVs attend the community dialogue meetings?

- 1. Yes ()
- 2. No ()

323. What role do CHVs play during community dialogue meetings

- 1. Provide data for discussion ()
- 2. Lead discussions during the meeting ()
- 3. Identify the main health issues affecting the community ()
- 4. Identify households which require health interventions ()
- 5. Galvanise the members of the community to attend the meeting ()
- 96. Others (*specify*) _____ ()

324. How useful are community dialogue days in identifying health problems afflicting the community

- 1. Very useful
- 2. Useful
- 3. Not Sure
- 4. Not Useful

325. Do you conduct community action days?

- 1. Never ()
- 2. Once a year ()
- 3. Bi-annual ()
- 4. Quartely ()
- 5. Monthly ()
- 6. As necessary ()

326. What role do CHVs play during community action days

- 1. Galvanise the members of the community to attend the meeting ()
- 2. Raise awareness about the health and other community development related issues ()

3. Implement the issues raised during the community dialogue days ()
96. Others (*specify*)_____

327. What best determines if the recommendations of the CHV will be implemented by a household

1. Follow up by CHVs ()
2. Availability of resources for the households to implement the resolutions ()
3. Follow up by the government officials ()
4. Education levels of the head of the household ()
5. Receptive attitude by members of the household ()
96. Others (*specify*)_____

328. What factor best determines if the resolutions of the community dialogue day will be implemented

1. Follow up by CHVs ()
2. Availability of resources for the households to implement the resolutions ()
3. Follow up by the government officials ()
4. Education levels of the head of the household ()
5. Receptive attitude by members of the household ()
96. Others (*specify*)_____

329. What factors most determines the effectiveness of a CHV

1. Level of education ()
2. Pay ()
3. Training ()
4. Gender ()
5. Support by the CHAs ()
6. Support by government officials ()
7. Availability of resources ()
96. Others (*specify*)_____

330. What in your opinion are the challenges you face with working with CHVs?

- i.
ii.
iii.

331. What in your opinion need to be done to address this/these challenges?

- i.
ii.
iii.

332. How do you monitor referrals from the community to the facility

333. How would you rate the accuracy of the reports you receive from the CHVs

- i. Very accurate
- ii. Accurate
- iii. Not sure
- iv. Inaccurate
- v. Very inaccurate

334. How would you rate the timeliness of the reports you receive from the CHVs

- i. Very timely
- ii. Timely
- iii. Not sure
- iv. Untimely
- v. Very untimely

335. Reporting of referrals from community to facility is low in KHIS. What can explain this?

<ul style="list-style-type: none"> i. ii. iii. iv. 	
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Record the time the interview ENDS	____ ____ : ____ ____	HOUR: MINUTE
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Appendix 4: SGS Approval Letter



MASENO UNIVERSITY
SCHOOL OF GRADUATE STUDIES

Office of the Dean

Our Ref: PG/MPH/00091/2011

Private Bag, MASENO, KENYA
Tel:(057)351 22/351008/351011
FAX: 254-057-351153/351221
Email: sgs@maseno.ac.ke

Date: 29th September, 2015

TO WHOM IT MAY CONCERN

**RE: PROPOSAL APPROVAL FOR BERNARD ODHIAMBO OTIENO —
PG/MPH/00091/2011**

The above named is registered in the Master of Public Health programme in the School of Public Health and Community Development, Maseno University. This is to confirm that his research proposal titled "Assessing the Role of Community Health Workers in Improving the Health of Children Aged 5 Years and below in Maseno Division" has been approved for conduct of research subject to obtaining all other permissions/clearances that may be required beforehand.

A handwritten signature in black ink, appearing to be 'P.O. Owuor'.

Prof. P.O. Owuor
DEAN, SCHOOL OF GRADUATE STUDIES



Appendix 5: Ethical Approval letter



MASENO UNIVERSITY ETHICS REVIEW COMMITTEE

Tel: +254 057 351 622 Ext: 3060
Fax: +254 057 351 221

Private Bag – 40105, Maseno, Kenya
Email: muero-secretariate@maseno.ac.ke

FROM: SECRETARY-MUERC

DATE: 1st November 2016

TO: Otieno Bernard Odhiambo
(PG/MPH/091/11)
Department: of public Health
School of Public Health and Community Development
Maseno University, P.O. Box Private Bag,
Maseno, Kenya.

REF: MSU/DRPI/MUERC/00400/19

RE: Assessing the Role of Community Health Workers in improving the Health of Children Aged 5 Years and Below in Maseno Division, Kisumu County, Kenya, Ref. No. MSU/DRPI/MUERC/00400/19

This is to inform that the Maseno University Ethics Review Committee (MUERC) determined that ethics issues were adequately addressed in the proposal presented for review. Consequently, the study is granted approval for implementation effective this 1st November, 2016 for a period of one (1) year.

Please note that authorization to conduct this study will automatically expire on 2nd October, 2017. If you plan to continue with the study beyond this date, please submit an application for continuation approval to MUERC Secretariat by 4th September, 2017.

Approval for continuation of study will be subject to successful submission of an annual progress report that is to reach MUERC secretariat by 4th February, 2017.

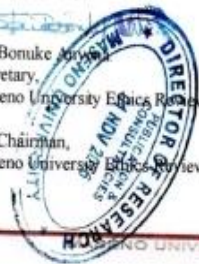
Please note that any unanticipated process resulting from the conduct of this study must be reported to MUERC. You are required to submit any proposed changes to the study to MUERC for review and approve prior to initiation. Please advise MUERC when the study is completed or discontinued.

Thank you.

Yours faithfully,

Dr. Bonuke Odhiambo
Secretary,
Maseno University Ethics Review Committee.

Cc: Chairman,
Maseno University Ethics Review Committee



MASENO UNIVERSITY IS ISO 9001:2008 CERTIFIED



Appendix 6: Permission to Conduct Research

APPENDIX VI: REQUEST FOR PERMISSION TO SUB COUNTY COMMISSIONER TO CARRY OUT RESEARCH- KISUMU WEST SUB COUNTY

BERNARD ODHIAMBO OTIENO
MASENO UNIVERSITY
SCHOOL OF PUBLIC HEALTH AND COMMUNITY DEVELOPMENT
MASENO

10th January, 2017

DEPUTY COUNTY COMMISSIONER
KISUMU WEST SUB COUNTY
MASENO

Dear Sir/Madam,

**RE: REQUEST FOR PERMISSION TO CARRY OUT ACADEMIC RESEARCH IN
YOUR SUB COUNTY**

I am a postgraduate student of Maseno University pursuing a Master Degree in Public Health
(Epidemiology and Population Health)

I wish to conduct an academic research on "*Assessment of the Role of Community Health
Workers of Children aged 5 years and below in Kisumu West Sub County, Kenya*". The
purpose of this letter is to request to be allowed to conduct this research within your Sub County

Thank you in advance.

Yours faithfully,



Bernard Odhiambo Otieno
Email: otienobo@yahoo.com
Mobile No. 0721952214

